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Address.

FIELD WORK OF THE STATE DEPARTMENT OF HEALTH ON COMMUNICABLE DISEASES.*

BY WILLIAM W. WALCOTT, M.D., NATICK, MASS.,

State District Health Officer, South Midland District.

ON the Statute Books we find the following: "A local Board of Health may take such action as it may deem necessary to protect the public health."

This statute is capable of very broad interpretation, and it is evident that, barring a military outfit, there is no body of men having the autocratic power of a local Board of Health, whether they see fit to use it or abuse it. In dealing with local boards, it is necessary constantly to bear this statute in mind, and to remember that an untrained local board is half child, half savage, and thoroughly human. One of the best examples of an efficient one-man board was found in a small mill town of about 2,000 population. Word was received by telephone that seven or eight cases of typhoid had been reported in this town within about forty-eight hours. The local Board of Health consisted of a mechanical engineer, a mule spinner in the factory, and a livery stable man, and the board had no particular organization. The problem here was to get in touch with the active man and coöperate with him. The active man in this case was the mechanical engineer,—one of sound common sense, and a real inflexible backbone. It was suggested to this man by telephone that he get together all the physicians in town and the mill superintendent, while I was on my way. A meeting was held by the roadside, and we obtained from the physicians lists of their reported cases and the suspected ones, and the milk supply in each case. I am going into this in more detail in order to give a better idea of the manner in which we have to handle the field work. The reason for having the mill superintendent present was to secure all the information possible in regard to the local water supply. It is not uncommon in mill villages of this type, having town water for the mill, to be equipped with an auxiliary supply from a source of known pollution, which is used for fire purposes only. In this particular case, the fire supply was drawn direct from the Blackstone River—rather high-class sewage. The way this supply situation is handled theoretically is as follows:

When the fire gong rings, one of the mill hands turns a valve, shutting off the town water, and allowing the Blackstone River water to be pumped through the mains, factory as well as household mains. Everyone in town is supposed to know this, and not drink or draw water until the Blackstone River water has been shut off and the town water again turned on. This is handled by means of a check valve, but check valves are usually open to suspicion. What really happened in this case was that there was a fire in the village sixteen or seventeen days before the first typhoid case was reported. This fire took

* Delivered at a special meeting of the Middlesex South District Medical Society on December 15, 1915.

place between 11 and 12 o'clock in the morning, during which time Blackstone River water was pumped direct to every main in town.

When the cases were plotted on a map, it was found that they occurred in the locality where the fire was and where the Blackstone River water was first pumped. Right here we came up against a danger in epidemiological work, that is, of drawing conclusions from insufficient data. So far we had the makings of a perfectly good water-borne outbreak, but as yet the milk supply had not been examined. It is needless to say that any suspicions as to the source of the trouble were not expressed either publicly or privately. The milk supply was next examined with the mechanical engineer. The problem here was simplified, owing to the fact that no milk was shipped in or out of this village. There were six local dealers to be investigated, and the usual questions were asked as to sickness, history of sickness, or history of sickness among the families of milk handlers, or if anyone had recently been employed or discharged. Without exception, they stated that they purchased no milk, and that there was no sickness on any of the premises among the milk handlers, with one exception. The milker on the largest dairy stated that he had been suffering from "dumb" malaria for some time, and a Widal was positive, as were later found the urine and feces. Of the twenty-two cases, with two fatalities, all but six were supplied by this dealer, and on investigating the others, it was found that the dealers supplying the others had, from time to time, borrowed a can or two from this large dealer. In every single case the patient was found to have been supplied with his milk, and the outbreak stopped when the cause was removed, *i. e.*, this typhoid milk handler. While it started with what was apparently a water-borne outbreak, it ended with a well-marked one of the milk variety, and the plotting of the subsequent cases showed that they did not follow the water mains, as they should in a water-borne epidemic, but followed this man's milk route.

This is a good example of a set of conditions where it is particularly important to withhold any opinion, should you happen to have one, or draw any conclusions, until you have collected and studied all the data at hand. It is also a good illustration of the efficiency of a one-man board, where the man in question follows instructions and coöperates actively with the State Health Department through its representative.

One day not long after the typhoid outbreak, word was received to come in a hurry to verify the diagnosis of glanders, made by a local physician. In spite of disregard of traffic regulations, the man was dead before I got there. This story is as follows:

The patient, a milker on one of the tributary supplies of a large dealer, had not been feeling well for two weeks, and had been under the care of a Christian Scientist. A short time before the man breathed his last, a local physician was called, who arrived in time to make a diagnosis and sign the death certificate. It was the intention to obtain some pus from one of the pustules to verify the diagnosis. Although I arrived but a short time after death, the undertaker, apparently believing the bacilli equipped with efficient motor apparatus, had wrapped the body in cotton soaked with formaldehyde, then wrapped it in a cotton sheet soaked with corrosive, and had it sealed in a casket. In this case, however, we were able to verify the diagnosis by means of one of the cows, and at autopsy, done under the supervision of the Department of Animal Industry, typical lesions were found. The matter was referred to the State Board of Registration in Medicine, but nothing could be done because here we come up against the old problem of "unwilling witness." The unwilling witness in this case was the man's wife, who stated that she had no regrets and would do the same thing again, as it was the deceased's wish, and absolutely refused information in regard to the much-sought healer.

From the many subjects that it is necessary to touch upon in order to give an idea of the field work, it just occurred to me that the title of this talk might better have been "Rambles of a District Health Officer."

The next instance was one of diphtheria. One night about 1 a.m. the telephone rang, and the question was asked why I was allowing diphtheria to be carted all over my district? When the questioner became calm enough to talk coherently, I learned that the parent of the child in a convent school had been requested to take his child home at once. He did this, called his family physician, who found that the child had a well-marked membrane. Inasmuch as there were two other children in the family, this parent was rightly very indignant. The Chairman of the Board of Health in the town where this school was located was instructed by telephone to examine the school at once. On arriving at the town in question, two of the local board met me and we proceeded to the school, where we were met by the Mother Superior, who assured me it was all a mistake, and that it would not happen again. She was told that it would not happen again, but that there seemed to be some question about the accidental part of it. She then said that she did not know about quarantine or did not understand anything about it. To obviate this difficulty, such a quarantine was established and maintained that there no longer exists in her mind any doubt as to the meaning of the word "quarantine." When a question was asked, the Mother Superior would discuss it in French with her subordinates, and after more or less discussion, I was given the expurgated history, but as I understood enough French to get the gist of the matter, I obtained, without any question, more information than

they intended to give. The facts were as follows:

The child had been sick from Monday until Friday, when her father was sent for, and up to the last day or two she had attended her classes, and some of the Sisters in the institution also taught in the parochial school. In short, things were pretty well mixed up. The cultures and clinical meetings showed that 12 cases developed from this one school, two of whom had been sent to their homes in Worcester.

Smallpox is not so rare in Massachusetts as some of us would like to consider it, and some of the severe cases of so-called chickenpox have proved to be smallpox.

In this connection it may be well to say that it sounds all right theoretically to say that we are representatives of the department, and kings on our own little playground, but as a matter of fact, it is not infrequent that the attempt is made, with more or less success, to use us for the goat. After all, this may not be such a bad idea, as it prevents us from taking ourselves too seriously.

On going to see a suspicious case of chickenpox in a co-educational boarding school of about 300 pupils, it was found that the physician's suspicions were correct, and that a Colombian had contracted the disease. He was quarantined in due form and manner, and everyone in the institution vaccinated. As it was near the Christmas holidays, the pupils went to their homes, and notices were sent to the local Board of Health in each of their home towns. As an example of what may occur in a well-vaccinated community, nothing happened; there were no further cases. The Colombian, however, objected to being quarantined, and the authorities told him that of course they would not be so cruel as to shut him up, but that it was all Dr. Walcott's fault,—he made them do it. So the Colombian insisted upon seeing Dr. Walcott. The next day I found the Colombian considerably disturbed,—body, mind and estate. He declared that I had insulted him by suggesting the quarantine; that his honor had been injured, and he wanted my blood and insisted that I fight a duel, giving me the choice of weapons. While I was considering the equipment in my arsenal, he became so offensive that finally I told him I would spank him if he didn't behave himself, and even this didn't satisfy him. He next said that his father was an officer in the Colombian navy, and that he would have his father bring the navy up and get me. I have had the privilege of seeing the Colombian navy, which consists of one little gunboat of shallow draught, so that I guess it would float in a heavy dew. I then explained to him that I lived in Natick, and for him to tell his father that doubtless the Charles River would be navigable for the Colombian navy as far as South Natick, after which point the walking would be good. So you see, field work is not without its dangers.

It may be well to pass over tuberculosis with only a few words, as too much is being said on this subject already. A good many people have seen the statement so many times that tuberculosis can be cured that they absolutely believe it of every case. Now the people whom we want most to reach, as a class think in headlines and read in headlines, and they have seen the headline, and their thinking is stopped there. It is not uncommon for them to believe that they can take "the cure" when they are out of work and there is nothing else to do, but do not like giving up work for it. If they have a winter job, they say, "Oh yes, I will take the treatment in the summer," and the other way about if they have a summer job. Right here use might be made of the keynote of the advertising quack doctor. His advertisement does not read, "My medicine will cure you," but reads more like this, "My medicine will cure you if you take bottle after bottle," and as a bottle often lasts a month, you will find that John Smith has been cured after having taken eighteen bottles. In this way the time element is emphasized, while in the tuberculosis work it may have been emphasized, but to many people it has not been brought home.

A word may be in order about the so-called incorrigible consumptive, and in this connection it is well to speak of the volunteer public health worker, because both may, under certain conditions, become a menace to public health work. We are asked time and time again why something or other is not done to the so-called incorrigible consumptive, and it is a question if there is not sufficient legislation to take care of him, but whether there is or not, the process is complicated, and there are many to be considered. For example, a common type is one who has been discharged from all the State Institutions against advice, and who is now, not only a menace to his family and neighbors, but a general menace, and we want to do something about it. The people involved are, in the first place, the patient himself, the attending physician, the local Board of Health, the State Board of Health, the State Board of Charity, the Trustees of Hospitals for Consumptives, the City Solicitor, the Attorney-General, and if the case goes to court, of course, the Judge and jury. While all this red tape is being unraveled, the incorrigible continues as usual.

Now, coming to the volunteer public health worker, we find she is oftentimes a restless representative of the fair sex, who really has the best intentions, but is entirely without training. Sometimes, and it is usually the case, they are officers in some public health organization. If you will think over the volunteer public health workers you know, I think that you will agree with me that there are plenty of generals, colonels, majors, captains, lieutenants, but sergeants, corporals and enlisted men are in the minority;

in fact, are very rare. In short, they suggest the Central American army, where everyone is a general, or, at least, an officer; and a volunteer public health worker who is not, at least, a subcommittee chairman has no standing in that craft. These workers have a sincere desire to elevate the so-called masses, and expect to do it by an express elevator, with no way-stations. They, apparently, do not realize that many of the people whom they are trying to elevate, do not want to be elevated, and are content to stay on the bottom, where they can't fall off. In disposing of a stock of elevation, a demand must first be created, just as in the case of any commercial commodity you may wish to sell. These volunteers often come with tears in their eyes and voice, and beg to do something for poor, suffering humanity in general, but particularly for the great white plague. The suggestion which is to follow was made in my annual report, but was expurgated, and had I not been given the opportunity of being here today, my rose might have "blushed unseen." The plan is to detail these volunteer workers to the incorrigible consumptives; here they can do no harm, and if they survive this acid test, they will become useful workers whom we can use in other fields. This is practicable, and I tried it in one case of which I will now speak.

The woman in question asked to be enlisted in the fight as a soldier in the army of those fighting the great white plague, so she was detailed to an incorrigible consumptive, and also, by the way, not long after, this man came to me and said, "For the Lord's sake, Doctor, won't you call off that woman?" But he was told that it couldn't be done, and that we knew how to start them, but we didn't know how to stop them. He was puzzled and could not understand it, so I told him maybe his position was like mine one time when I got aboard a burro, who was not much of a linguist, as he understood Spanish only, a knowledge of which had been omitted from my education. Consequently, not understanding English, he went where he pleased, and there was nothing for me to do but to submit a minority report. In a few days the man came back again and he said, "I am on the wagon." When I asked what the matter was, he replied, "I can't even smell a drink without seeing that woman coming." To make a long story short, this man became a model patient, and although he has since died, he died "on the wagon." The woman, on the other hand, is now an able, efficient, active worker, which I think demonstrates a great possibility in volunteer public health workers if they are properly handled.

The next topic is cases that people speak of as the "milder" diseases and do not take them seriously enough, as measles. As you know, measles is pretty hard to control, and whooping cough is also hard. In Massachusetts, from Nov. 1, 1914, to Nov. 1, 1915, there were 6000 reported cases of whooping cough and 237 deaths. That is too many cases and the death rate is a good deal too high, and, also, that 237 probably does not represent all the death cases,—a good many physicians reporting the contributing cause rather than the primary, and so, some pneumonia, heart cases, etc., should have gone down as whooping cough.

These so-called "mild" diseases can best be handled by educational work, and Professor Gunn of the Division of Hygiene, with lectures and educational work, is filling in this gap.

We now come to "carriers." It has been shown beyond any reasonable doubt that there are "carriers" for diphtheria, typhoid fever, and two or three other diseases. It would seem as if some of the unexplained cases could be explained if we grant that there may be "carriers" for other diseases, and, of late, the study of records, such as scarlet fever, showed where the release from quarantine had been based on the discharges from the ears and nose, there had been a marked decrease in the return cases, and also a decrease in the length of time the patient had to be shut up in the hospital.

There was an example of a typhoid "carrier" in the Worcester Insane Hospital. There were about six cases of typhoid reported inside of a week. We found that all these cases took their meals in one dining-room. We took Widals from all the food handlers. There we found one Widal positive, as were later found the urine and feces, from one of the patients who handled the patients' food. This patient had been an inmate of the institution for about twelve years; had typhoid in 1905, but had been a food handler for only six months. When she was taken away from the food department all the cases stopped.

At this time everyone was immunized, and every new patient or employee is immunized as he enters the institution, so that we have at least one oasis in the state so far as typhoid is concerned.

The problem of diphtheria is entirely different from that of typhoid. In time of outbreaks, when many cultures are taken, from other members of the family, school children, employees, etc., many cultures are obtained from people having no clinical symptoms. Many communities isolate these people for varying lengths of time or until one or more negative cultures have been obtained. Because people who are apparently well have objected to being so quarantined, in some cases the virulence tests are being made. The Department is now making these tests upon request. Inasmuch as in each particular instance, this requires considerable laboratory work, as well as the inoculation of the guinea-pig, the practitioner cannot, as a rule, receive a report from a virulence test inside of six days. Some time ago the Committee of the American Public Health Association on the study and prevention of communicable diseases sent out a questionnaire to 183 cities in the United States, Canada and Mexico, asking about the methods of control of diphtheria and diph-

theria carriers. Eighty-three replies were received. The methods of handling the diphtheria were so varied that it is not worth while to try to tabulate them or go into them here. It may be well, however, to say a word as to the various methods of dealing with "carriers." Of the eighty-three replies received, fifty-six cities treat the carriers exactly as if they were clinical cases. In one or two cities they put a sign over the door, reading "Diphtheria Carrier;" in sixty cities they advise the usual anti-diphtheritic treatment; and only five advise the use of the staphylococcus spray, but this, I believe, may not be without untoward effects. Only three cities make use of the virulence test.

From these figures, as well as conditions with which we are familiar in our own state, it is evident that the diphtheria situation is far from satisfactory.

Dr. Swan asked me to say a word about some fumigation experiments, which Dr. Curtis, Chairman of the Newton Board of Health, and the reader did about five years ago. When the results were published, through some error, Dr. Curtis's name was omitted and the experiments appeared as my own. Just to show that Dr. Curtis was present, I will tell you how the whole thing started:

I went into the office of the Newton Board of Health one morning, when Dr. Curtis said, "Look here, I think Dr. Chapin is right and this fumigation is all rot." So I said, "Well, what are you going to do about it?" To this he replied "I will put my time against yours and will carry on a series of experiments to see whether it is of any use or not."

Through the courtesy of the trustees of the Newton Hospital, and later, through the courtesy of everyone there,—physicians, nurses, house officers, and even the "strangers that were within the gates," we secured the use of two rooms exactly alike for an indefinite period. On looking up the literature on the subject, it was found that most of the experiments had been done under laboratory conditions, with laboratory cultures, and it was our plan to do the experiments as nearly as possible under service conditions. One of the rooms we sealed and fumigated and the other room, which we used for control, we left as it was. We made inoculations upon compresses of cotton, linen, gauze, and sometimes on the wall. Some of these we put on the floor, the table, the chairs, the mantelpiece, window sill, and bed at various locations and elevations. We made similar inoculations, under exactly the same conditions, in the control room.

It was our custom every morning, when we examined cultures after fumigation, to examine those in the fumigated room first, and when it was found that the cultures were dead, and it began to look as though the fumigation had done some good, we would examine the control cultures, and usually found that these cultures had also died,—apparently died a natural death. We made no use of laboratory cultures because of the possibility of their being attenuated, but for our material took smears and swabs from noses, throats, and ears in the contagious wards. and from suppurating wounds in any of the other wards in the hospital. In this way good, live, virulent organisms were obtained.

A circular letter was sent to boards of health all over the country, asking for their methods of fumigation. Replies were tabulated, and we used every known method of fumigation, for example, sulphur candles, sulphur powder, formaldehyde candles, as well as the apparatus for generating formaldehyde gas from the 40% formaldehyde solution. Potassium permanganate and formaldehyde, at the rate of 1:2 were also used, as well as a mixture of aluminum sulphate, formaldehyde, quicklime and water. Fumigation was carried on for varying lengths of time,—24, 36, 48, and even 72 hours. All the proprietary preparations were also tried under the same conditions. In using the generator for formaldehyde gas, when the attempt was made to force the machine by using more heat, it simply expelled boiling formaldehyde, instead of more gas. In one case of proprietary preparation, where one candle was guaranteed to kill every germ in a given room, we made a little shrine of several of these candles and put the inoculations in the center, and the germs lived happily through the experiment.

These experiments were carried on for nearly a year, and after tabulating the results, the conclusion was reached that gaseous disinfection, as we had carried it out, had no persistent or consistent effects upon the cultures we had used. In other words, fumigation did not fumigate.

In the letter sent to the local boards of health, asking about the methods of fumigation, we found the usual method was to burn a candle or start the formaldehyde generator, and leave instructions with the householder to open the windows after a certain time. This, naturally, did no good, but gave a false sense of security, because oftentimes bedding and other things, which should have been washed or boiled, were simply fumigated. The argument on the other side is that by fumigation we make such an unholy odor that places are aired that never would be under any other conditions.

The city of Newton, being the first one in the state and the second one in New England, Providence being first, promptly made fumigation optional and ceased to do it as a matter of routine. Since that time other cities, such as Boston and New York, have also discontinued it. Philadelphia, I believe, still fumigates for typhoid fever.

It does not seem wise to attempt to cram down people's throats the idea that fumigation does not fumigate, but rather, feed it to them in homeopathic doses, and let them gradually get used to the idea, but making it voluntary. In the meantime, make sure where it is carried out, that it does not replace the good, old-fashioned

yellow soap and water, with plenty of elbow grease. Of course, if the room in which the patient has been ill, can be scrubbed, scoured, painted and papered, that is all that is necessary so far as the room is concerned, but if that is not possible, a good, safe working rule is to scrub with yellow soap and hot water as high as a man can reach. When, finally, fumigation is discontinued, a good many dollars may be spent to much better advantage.

Original Articles.

THE END-RESULTS IN SEVENTY CONSECUTIVE CASES OF UMBILICAL HERNIA OPERATED UPON AT THE MASSACHUSETTS GENERAL HOSPITAL.

BY CHANNING C. SIMMONS, M.D., BOSTON,

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THIS report is based on the seventy consecutive cases of umbilical hernia operated upon at the Massachusetts General Hospital between January 1, 1909 and April 1, 1914. The end-result has been obtained in nearly every case. During the last fourteen months of this period I had the opportunity to operate upon all the cases entering the hospital as a special assignment,—fourteen in all. The other fifty-six cases were operated upon by twenty different members of the staff, the largest number done by any one man being seven.

The length of time the cases were followed after operation varies from one to four years, This may seem short, but herniae, if they are going to recur, practically always do so in less than one year from the time of operation, usually in a few months, so that cases remaining well over one year may properly be called cured. In 1910, I reported the end-results of the operations on inguinal hernia in the year 1905, and of the thirteen recurrences in the 146 cases traced, all, when the length of time after operation could be determined, recurred within a year and most in a few months.

For purposes of analysis the cases have been divided into three groups.

Group 1. Small congenital umbilical hernia in children, and small herniae in adults which were operated upon incidentally in the course of another operation, but for which the patient did not seek medical advice. There were 15 cases in this group.

Group 2. The typical cases of large umbilical hernia of slow growth in stout, middle-aged adults, usually women, 43 cases. These cases are all poor subjects for operation. They are stout and often do not take an anesthetic well. Many of them are also complicated by other hernia, cardiac insufficiency, or pelvic trouble, as prolapse. Thus nineteen of the 43 cases were complicated in some manner. In twelve some other operation was necessary and performed at the same time. Four had cardiac insufficiency, two were ulcerated, two had had previous operations for cure of the hernia, while one had a large goitre. To obtain a cure in these cases the hernia must be attacked in a systematic manner. Infinite pains should be taken to control all hæmorrhage and remove all loose fragments of fat that might become necrotic, and to obtain accurate apposition of the parts.

Group 3. Strangulated hernia,—12 cases. Some of these were typical cases of strangulated hernia with congested or gangrenous gut. Several, however, although operated upon as emergencies, might more fittingly be termed irreducible incarcerated herniae. In these cases an attempt at cure was made and in the analysis of the results of operation they have been placed in group 2.

The operations performed may be divided into three main types. (1) The closure of the ring by suture vertically with or without an overlapping of the aponeurosis. (2) Transverse closure of the ring without overlapping of the aponeurosis. (3) Transverse closure with overlapping of the aponeurosis, the Mayo operation. I have always employed the Mayo operation, as yet with no recurrences, and these statistics, although relatively small in numbers, show the advantage of this operation over the others. The ring, which is usually much smaller than the size of the hernia would lead one to suppose, can in nearly every case be closed transversely without tension; while, if the edges are brought together vertically, considerable force is necessary.

I have performed the operations as follows:—An oval transverse incision is made about the umbilicus including the hernia mass. This is carried straight down to the fascia. The mass of fat and hernia is then dissected toward the ring keeping close to the aponeurosis and all hemorrhage from the small perforating veins carefully controlled. By keeping gentle traction on the hernia mass, these can usually be seen and clamped before being cut and the operation in this manner is done almost bloodlessly. The dissection is carried to the edge of the ring and the anatomical structures developed until finally the mass of hernia and fat can be lifted up, being attached to the body only by the sac. The sac is then opened, close to the ring, the contents freed from adhesions and returned to the abdominal cavity or, if omentum, excised. The ring is then closed by the Mayo method, transversely with an overlap from above downwards, by five Pagenstecker mattress sutures. Especial care should be taken in closing the ends of the wound, as it is at this point that recurrence is particularly likely to occur. In some cases the

peritoneum may be closed by a separate stitch, but it is usually impossible, as at the umbilicus the peritoneum is very friable and difficult to differentiate. The free edge of the aponeurosis is caught down with chromic gut sutures and the wound closed with buried catgut sutures in the fat to obliterate the dead spaces. I have had considerable trouble with collections of serum in the loose subcutaneous tissue appearing on about the tenth day. These pockets usually have to be evacuated. Slight skin sepsis is apt to result, with the formation of a sinus which persists for a few weeks. At present I think this is best obviated by a rubber drain introduced to the main wound through a stab wound in the side. It should be left in for five to seven days. After operation the patients are kept in bed for from eighteen to twenty-one days.

RESULTS OF OPERATION.

Group 1. (Children and small herniae in thin adults.) Of the fifteen cases in this group, four could not be traced, and one died of intercurrent disease. Of the remaining ten cases, three adults and seven children, all are well and without recurrence. In one the ring was closed transversely, in three, transversely with an overlap, the Mayo operation, and six were closed vertically. The influence of skin sepsis on recurrence cannot be determined as the two cases in which it occurred have not been traced. Chromic catgut was used as suture material in all but one case.

These cases, although few in number, show that it makes little difference what operation is performed in cases of umbilical hernia in children or small umbilical hernia in thin adults. Cure is always to be expected.

Group 2. (Stout adults.) Of the forty-three cases in this group, two died following operation. One of these (Case 10) died of shock, but as, in this case, the hernia was small, and as a difficult hysterectomy was done at the same time, I have excluded it, as the hysterectomy was obviously the cause of death. The other (Case 16) died suddenly on the table. She was a very stout woman with a systolic murmur and an incarcerated hernia. During operation, ether anesthesia, breathing stopped and the patient died without apparent cause. Autopsy failed to show the cause of death. Mortality one in forty-two or 2.4%.

The result of operation is unknown in two other cases, leaving thirty-nine cases from which conclusions may be drawn. To these I have added six cases of strangulated hernia who survived the operation, in which at the time of operation an attempt was made to cure the hernia.

Of these forty-five cases, in ten the hernia recurred (22.2%), a very large percentage of recurrence. The reason shows on further analysis. Comparing the recurrences with the type of operation performed, in the thirty cases where the Mayo operation was performed, there were three recurrences, or 10%, while in the fourteen cases where the ring was closed vertically, with or without overlapping of the aponeurosis, six recurred, or 42.8%. The only case closed transversely, without overlapping, recurred.

These cases show the advantage of the Mayo operation, although the percentage of recurrent cases, even after this operation, is larger than it should be.

Eleven of these cases were operated upon by me with no recurrence. One of them, however, classed as a cure, needs special mention,—a case of supposed strangulated hernia, where at operation the acute symptoms were found due to a perforated appendix, situated under the umbilicus. The hernia was closed in the usual manner, and the appendix abscess drained through a right rectus incision. The umbilical hernia has remained cured, but there is a large hernia at the point of drainage of the appendix abscess.

Local sepsis apparently played little part in the recurrent cases, for of thirty-one clean cases, six recurred; while of the fourteen cases in which there was local sepsis three recurred. As to suture material, four of the recurrent cases were sutured with chromic catgut, two with kangaroo tendon, and three with non-absorbable suture material.

The recurrent cases in detail are as follows:

CASE 5. Obese woman 52 years old. Irreducible hernia for years, the size of a grape fruit, for which she wore a truss without relief. Also has a goitre, and a systolic murmur at the apex. Sac contained adherent omentum. Ring closed transversely with kangaroo without overlap. Some superficial sepsis. In bed 18 days. Discharged wearing a supporter. Hernia recurred in ten months following a fall.

CASE 7. An obese woman 29 years old. Small reducible umbilical hernia. She also had diastasis of the recti, and a femoral hernia. Ring closed vertically with chromic catgut and silk. In bed 18 days. Recurrence present at the end of one year.

CASE 11. Obese woman 42 years old. Irreducible umbilical hernia the size of an orange. At operation sac contained adherent omentum. Sac folded in and aponeurosis closed vertically over it with chromic gut. Recurrence present one year later.

CASE 15. Very fat woman 32 years old. Small umbilical hernia reducible with difficulty. At operation, ring closed vertically with chromic gut sutures. Recurred in six months to the size of an orange. Operated upon again and was well one year after second operation.

CASE 19. Obese woman 46 years old. Reducible umbilical hernia the size of an orange. At operation the aponeurosis was closed vertically in two layers with silk, with an overlap. Hematoma of wound followed operation. Two years later there was a large recurrence, causing much pain.

CASE 23. Very fat man 52 years of age. Irreducible umbilical hernia the size of an orange, caus-

ing much pain. At operation the ring was closed by drawing the posterior sheath of the rectus together vertically and the anterior transversely with an overlap. (I have classed this as a Mayo operation). Suture material chromic catgut. Recurred to the size of an orange in six months.

CASE 29. Obese woman 62 years of age. Irreducible umbilical hernia the size of an orange, causing much pain. At operation the ring was closed vertically with overlapping of the aponeurosis, with chromic catgut. One year later there was a recurrence the size of a grape fruit.

CASE 32. Very obese woman 64 years of age. Large ulcerated umbilical hernia. The ring, at operation, was one inch in diameter. It was closed by the Mayo method with Pagenstecker and chromic catgut. Some skin sepsis following operation. Large recurrence at the end of two months, chiefly at the end of the incision.

CASE 34. Female 45 years old. Small reducible umbilical hernia and an epigastric hernia of rather large size. At operation two separate herniae were found. Rings closed transversely without overlapping of the aponeurosis, with kangaroo. One year later the umbilical hernia had recurred.

CASE 209. Obese woman 58 years of age. Umbilical hernia the size of a child's head, strangulated for seven hours. At operation the sac contained viable bowel and omentum. The ring was closed by the Mayo method with Pagenstecker and chromic catgut. One year later there was a large recurrence at the outer end of the scar on the right.

TABLE OF RESULTS—STOUT ADULT CASES.

	Total.	Excluded or Not Traced.	Mortality.	Cures.	Recurrent.	Percent. of Cures.
All cases.....	49	3	1	35	10	78.8
Mayo operation...	30	0	0	27	3	90.0
Other operations..	19	3	1	8	7	53.8

Group 3. (Strangulated hernia.) No particular deductions can be drawn from this group as the numbers are so small and the conditions found at operation so varied. In nine of the twelve cases an attempt was made to cure the hernia. Two of these cases died following operation,—one of pneumonia, a man of seventy-six; and one of probable pulmonary embolism, and one has since died of cirrhosis of the liver. The other six cases have been discussed in Group 2. In the remaining three cases enterostomy was done, and a loop of gangrenous intestine resected. One of these died of peritonitis, but in the other two the fecal fistula was successfully closed at a secondary operation. In one of these the hernia was cured, while in the other it recurred.

DETAILED ANALYSIS OF CASES.

Group 1. There were 15 cases in this group, which may be divided as follows: Children with umbilical hernia of the congenital type, 10 cases. Males 4, females 6. Adults, 5 cases; males 3, females 2. The 15 cases were operated upon by 12 different surgeons.

Children. All were, without doubt, of congenital origin, and with one exception, Case 103, caused no symptoms. This one case had some pain. Eight were described as small and two large (the size of an egg). Four had been treated by strapping, without relief. The children were, as a rule, brought to the hospital by their parents at the advice of the local physician, the parents knowing the defect existed, and wishing it corrected.

In the five adult cases the herniae were all small, caused no symptoms, and were operated upon in the course of some other operation, as follows. One case wished a small hernia cured so he could enter the Army (Case 100). Case 104 was admitted with a strangulated femoral hernia. Case 110 was operated upon for chronic appendicitis, Case 111 for repair of a lacerated cervix and perineum, and Case 112 for inguinal hernia.

Complications. Two cases had slight skin sepsis, 102, 112. In two cases the operation was followed by broncho-pneumonia,—104, 107,—one of these being a case of strangulated femoral hernia, who died sixteen months later of cardio-renal disease. In one case the operation was followed by scarlet fever, Case 101.

Group 2. There are 43 cases in this group. The etiological data are as follows.

There were 7 males and 36 females, 32 of whom had borne children.

The average age was 46.6 years, the youngest being 25 and the oldest 66. Most of the herniae had been present several years, and had been slowly increasing in size.

Thirty cases complained of more or less pain, 5 had no symptoms, and the fact was not noted in 8.

Twenty-one were reducible, one of these *en bloc,* and 19 were adherent and incarcerated, although some of these were partly reducible.

The size may be roughly described as being that of a grape fruit in 8 cases, an orange in 14, a lemon in 7, "small" in 13, and was not noted in one case.

Twelve cases had some other operation performed at the same time, as follows.

Femoral hernia.....	2
Inguinal hernia.....	2
Epigastric hernia.....	1
Repair cervix and perineum.....	4
Chronic appendix removed.....	2
Hysterectomy.....	1

It will be seen that 5 out of the 43 cases had some other form of hernia present, 11.5%.

In most cases the sac was multilocular, and in 14 there were masses of adherent omentum, while 3 contained adherent bowel. In one case the entire cecum, ascending and transverse colon were in the sac. In Case 43 the tumor was reducible, but at operation the sac contained con-

siderable adherent omentum, and reduction consisted of turning it partly inside out. Besides the omentum and bowel, the sac in several cases contained fluid, and the contents presented other evidence of interference with the circulation.

Fourteen cases showed some form of sepsis after operation, one of these cases having phlebitis (Case 8). In two of these cases there was a large ulcer at the time of operation, and a moderate amount of skin sepsis was anticipated. The sepsis was in every case of low grade and very mild, but prevented absolute first intention healing. The wounds healed apparently by primary union, but at the end of from one to two weeks a pocket of serum and "oil" formed under the skin, which necessitated evacuation. Following this, a sinus persisted, which, however, usually closed in a few weeks. In some cases the serum became infected, forming a superficial abscess. In one case (Case 37) several sinuses persisted for three months, at the end of which time a Wassermann was taken, and found positive. Healing occurred promptly after the administration of salvarsan.

Group 3. The 12 cases of strangulated hernia, which were operated upon by 9 different surgeons.

All but one, a case with cirrhosis of the liver, were stout, and all were in elderly adults, the average age being 57 years. The youngest was 44 and the oldest 80. There were two males and ten females.

Seven were described as being the size of a grape fruit and five as that of an orange. In four the hernia had been strangulated previously, and one had had one, and another four, unsuccessful operations performed, the hernia recurring each time. In the other two cases the hernia had been reduced.

The length of time between the onset of symptoms and the operation varied from three hours to two weeks. In five cases the sac contained gut and omentum, viable in every instance; in four cases gut alone, gangrenous in three; and in three cases omentum alone, gangrenous in two instances. The condition of the contents of the hernia, that is, whether it was viable or gangrenous, bore no relation to the length of time the hernia had been irreducible and caused acute symptoms. In Case 211 the gut was gangrenous, although the hernia had been down only seven hours, while in several cases strangulated for from two to four days, the sac contained fluid and engorged omentum or gut, which, however, was perfectly viable.

Complications. Two cases had a cardiac lesion, one a thyroid tumor, one cirrhosis of the liver in an advanced stage, and one diabetes,—7% of sugar. These last two cases were operated upon under spinal anesthesia. Ether was used as an anesthetic in nine cases, and in one enterostomy was performed under local anesthesia.

There were three deaths. One case died on the second day after operation, a man of 75, of postoperative pneumonia. One case, in which the sac contained ruptured gangrenous gut, died in twelve hours of peritonitis, and one suddenly four weeks after operation, the day after she was discharged from the hospital. This death was due, as far as can be determined, to pulmonary embolism.

CONCLUSIONS.

Small umbilical herniae in thin adults, and umbilical hernia in children, may be cured by any operation which removes the sac and closes the defect in the abdominal wall.

Cases of umbilical hernia in stout adults are difficult to cure. The Mayo operation, of transverse closure of the ring, with an overlap of the aponeurosis, gives the best results.

In adults, closure of the ring by any other method than the Mayo, in a general hospital, is followed by 46.4% of recurrence.

Recurrence, if it is to take place, usually does so in less than one year.

The suture material employed has no relation to the liability to recurrence.

Skin sepsis is very likely to occur, but, apparently has no relation to recurrence.

SOME ELECTROCARDIOGRAPHIC STUDIES OF PATIENTS UNDER DIGITALIS TREATMENT

BY HAROLD W. STEVENS, M.D., BOSTON.

THE observations upon this series of patients were made while working as a fourth year student in the medical wards of the Peter Bent Brigham Hospital. Their purpose was to study the variations of the individual electrocardiogram during the course of digitalis treatment and, if possible, to determine which variations may be related with the effect of the drug.

The patients were chosen with regard mainly for the condition that the group include the common types in which digitalis treatment is usually considered as indicated. The group (see tables at end for data of the electrocardiograms, etc., of the cases) contains two cases of auricular fibrillation, two cases of auricular flutter, one case of paroxysmal tachycardia and three cases with normal rhythm, but showing evidence of myocardial weakness. The conditions of observation were such that it did not seem feasible to limit the study to cases receiving digitalis alone. Consequently several of the patients at some time during the period of study received other drugs, none of which, however, is recognized as having any definite cardiac effect. Successive electrocardiographic tracings of individual patients were made as frequently as it seemed that a record would be significant, the intervals varying from one to several days.

The features of the tracings to which special attention has been given are: auricular and ventricular rates; the P-R and R-T intervals; the variations in amplitude of the P, Q, R, S and T waves; variations in form of the P and T waves; and the effects of vagus stimulation. Time periods were measured in 25th seconds, and amplitudes in millimetres, the galvanometer string being each time standardized as nearly as possible so that the recorded deflections in mm. should indicate directly electrical disturbances measured in millivolts. The various measurements have been correlated and tabulated in parallel columns together with the corresponding digitalis medication, (see tables at end).

In accord with one of the commonly recognized effects of digitalis, five of the cases showed decided slowing of the ventricular rate. Of these only one, No. 2111, was a case of normal rhythm. In this instance, during the course of nine days of treatment with the drug, the rate fell from 100 to 70 and remained at about this level for 16 days on three daily doses of digitalis. After reducing the drug to one daily dose the rate rose in 6 days to 90.

The second, case No. 2141, had auricular flutter which persisted throughout the first five days of vigorous treatment, with an auricular rate of about 320 and a ventricular rate of about 80. The tracing made on the sixth day showed both auricle and ventricle beating at a rate of 100. No transition interval of fibrillation was detected. Digitalis was stopped immediately. On the second day the rate had fallen to 85; but on the sixth day after the ending of the digitalis the rate had risen above 100. Digitalis was resumed and continued till the discharge of the patient eight days later, at which time the rate had fallen to 70.

No. 2092, the third of the patients which showed slowing under digitalis, was a case of paroxysmal tachycardia. This patient had a rate of about 250 while in tachycardia. During the night the rate fell to 110. The electrocardiogram taken at about 10 A.M. on the day following the cessation of the tachycardia showed a normal rhythm of a rate about 90. Digitalis was omitted and on the following day the rate had fallen to 70 where it remained approximately during the remaining five days of the patient's stay in the hospital. In how far the slowing of rate from 90 to 70 was the result of digitalis can not be stated definitely. The change from tachycardia to slow rate was probably not a digitalis effect.

The remaining two of the five cases that showed a slowing in rate, No. 2061 and 2081, were both cases of auricular fibrillation with rapid ventricular rates. Both of these showed marked slowing under digitalis and decided increase of the rate following the discontinuance of the drug.

The only instance of slowing of the auricular rate was found in the cases of normal rhythm with rapid rate.

The cases showing no decided change in the rate were a case of paroxysmal fibrillation, No. 2118, and two cases, No. 2257 and No. 2258, both of which were started on the digitalis treatment with a normal rhythm and an approximately normal rate.

All cases in which the auricle and ventricle were beating in normal sequence showed considerable variation in both P-R and R-T intervals. In two of these, 2141 and 2111, there appeared a decided increase of P-R interval corresponding with the period of digitalis treatment; and with discontinuance or diminution of the digitalis, a corresponding shortening of the period. Three of the cases, 2092, 2257 and 2258, showing slight variations, or variations which appear not related to the digitalis, showed also practically no change in the rate over the period during which the P-R interval was measured.

Five of the series, 2061, 2081, 2092, 2111 and 2141, showed an R-T interval gradually increasing over the period of treatment; while two of these, 2061 and 2111, which were observed after the withdrawal of the drug, showed a decrease in the R-T interval which appears to correspond with the time when the effect of the drug should be wearing off. The high and apparently anomalous value for R-T on the first day of case 2257 may possibly be related to the extreme condition of the patient at the time of entry, or to the previous dosage of morphia and adrenalin. The last tracing recorded on patient No. 2111 was made on the day before the death of the patient. The very high values for both P-R and R-T may have been related to the terminal pericarditis, evidence of which was found at autopsy.

A comparison of the variation in P-R and R-T intervals with the corresponding rate change over the same time periods suggests that the variation in these intervals, representing together the length of the heart beats, may be closely related with, or perhaps really a part of, the rate change. As a check on this possibility a study was made of the tracings of several supposedly normal hearts, first while resting, again immediately after violent exercise and then at intervals during the process of return to the normal rate. In all these cases where there was a great increase in the heart rate there was overlapping and distortion of the P and T waves so that accurate comparisons were difficult. However, by using as an index the crests of the P and T waves, it was possible to determine that in these supposedly normal hearts, not under the influence of digitalis, with a markedly increased rate, there was some shortening of the P-R and R-T intervals and hence of the whole length of systole; there could be detected also increase in these periods corresponding to the return to normal rate. In other words, it seems probable that, irrespective of the drug effect, in both normal and abnormal hearts, the length of systole is related directly with the length of the cardiac cycle, though the variations in the duration of

P. B. B. H. Med. No. 2061. Diagnosis: Chronic cardiac valvular disease; mitral stenosis and regurgitation; chronic myocarditis; auricular fibrillation.

Date 1914	Digitalis	A rate	V rate	P-R time 50th sec.	R-T time 50th sec.	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B.Press.	P.Def.
							(in mm.)				(in mm.)				(in mm.)				
Dec. 20	Digitalis folia, .1gm. tid. 6 pm.																		
21	" " "	444*	159		13		1.	-3.5	1.	±1.	4.5	-4.	1.5	±1.5	5.5	-1.	1.5		70
22	" " "	410*	99		16		.5	-3.5	.5	±1	5.	-2	1	±1.5	8.5	-1	1.		40
23	" " "	420*	105		15		1.	-5	1.		3.5	-2.5	2.	±1.	7.5	-2.	2.		21
24	omitted 6pm		77		16		1.	-3.5	1		3.	-3.	2.5	±1.5	7.	-2.	2.		18
25	.1 bid 6pm.																2.		
26	" " "	400*	95		16		1.5	-5.5	1.		5.	-3	2.5	±1.5	10.	-2	2.		8
28	" " "		93		16		1.	-4.5	1.		4.5	-3.5	3.	±1.	7.	-1	2.5		12
29	" " "		90		16		1.5	-6.	1.5		4.	-3.	3.5	±1.5	9.	-2.	2.		8
30	" " "		94		16		1.	-4.5	2.		4.	-3	2.5	±.5	8.	-2.	1.5		14
31	" " "		88		16		1.5	-3.5	1.5		3.5	-2	2.5	±.5	6.	-.5	1.		8
Jan. 1	" " "		87		17		1.	-4	1.		4.	-2	2.	±1	8	-.5	-2. +2	Frequent coupling	22
2	10 am. omitted	435*	84		17		1.5	-3	1.5		3.5	-2.	2.	±2.	7.	-1.	-1. +2.		30/8
3			77		16		1.	-5.	2.		4.	-3.	2.	±2.	9.5	-2.	-1. +2.		8
4			78		17		1.	-5	1.		5	-2	2.5	±2.	10.	-1.	2.		4
6			85		16		1.	-4	1.		4.	-3.	1.5	±1.	6.	-2.	-.5 +1.		8
9		468*	88		15		.5	-4.	.5		3.	-3.	1.	±1.	5.	-2.	.5		9
11			102		16		1.	-4.	.5		3.	-4.	2.	±1	5	-2.	1.		12
15	Infus. 10cc tid(7 pm)	435*	120		15		1.5	-6	2.5	±1.	4.5	-3.	3.	±2.	10.	-1.	2.		25
19	" " "		87		17	±1	1.	-5.	2.		3.	-3	2.	±1.	6.	-.5	-1. +1		12
23	make bid.	420*	78		17		1.	-4	2.		3.	-1.5	2.	±.5	5.	-.5	-.5 +1		5
28	" " "	412*	72		16		1.	-4.	2.		3.	-3.	2.	±.5	5.	-.5	-1.5 +1.5	Frequent coupled beats	40/5
Feb. 3.	omitted Jan 29)	480*	90		16		1.	-7	2.		5.	-5.	2.5	±1.5	10	-2.	-.5 +.5		0
8		409*	88		16	±.5	1.5	-7	2.	±.5	5.	-4.5	2.	±1.	10	-2.	-1. +2		
9		460*	93		15	±.5	1.	-6.	1.5	±.5	5.5	-5.	2.5	±.5	10	-3.	-.5 +1		

* Approximate rate.

P. B. B. H. Med. No. 2141. Diagnosis: Chronic nephritis and hypertension; chronic myocarditis; auricular flutter.

Date 1915	Digitalis	A rate	V rate	P-R time 50th Sec.	R-T time 50th sec.	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B.Press.	P. Def.
							(in mm.)				(in mm.)				(in mm.)				
Jan. 8	Infusion.	10cc.	tid.	at 6pm.														160-85	
9	"	315	87		16		5		1.	±3.	6	-2	2.	±2.		-1.			
10	"	312	78		16		7		1.	±1 5	9	-1.	2.5	±1.5	1.	-.5	1		
		Vagus	pressure.		Left	2 beats blocked.				right, slight slowing. (See tracing)									
11	"	315	79		16		7		1.5	±2.	8		1.5	±1.5				155-82	
12	"	312	80		16		7.5		1.	±1 5	9.		1.5	±1.5	1.				
13	"	320	80 62		17		11.		2.	±1 5	10.		3.	±1.5	3.				
		Vagus	pressure.		Left	4 blocked		Right,		3 blocked.									
14	omitted 6 pm.	100	100	11	16	1.	7		1 5	1 5	8	.5	2.	1.	1.5		1.5	153-86(Jan 15)	
16		85	85	12	17	1.5	8.		3.	1.	7.		1.5	1.	1.5		1.5	130-60(Jan 17)	
18		100	100	11	17	1	8		1.2	1.	8.	1.	2.5	1.	1.5	1.	1.5		
20	Folia, .05	bid.																	
21	"	93	93	10	16	3	6.	1.5	1.	1.	9.	.5	3.	.5	1.	1.5	1.5	116-66	
22	"	97	97	10	17	.5	6.		1 5	1.5	9.5		4.	1.	2.5		1.5	110-70(Jan 24)	
27	Omitted at 6 pm																	120-85(" 25)	
28	Infusion 5cc.-tid at 10 am.	70	70	13	18	1.	9.		1.5	1.5	12.		4.	1.	2.		2.	140-75(Jan 29)	
		Vagus	pressure.		Left, 7	blocked beats.				Right, moderate slowing									

P. B. B. H. Med. Nos. 1987 and 2120. Diagnosis: Prostatic tumor (probably malignant); mediastinal tumor (probably secondary); chronic myocarditis; auricular fibrillation (paroxysmal).

Date	Digitalis	A rate	V rate	P-R time 50th sec.	R-T time 50th sec.	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B.Press.	P.def.
							(in mm.)				(in mm.)				(in mm.)				
1915 Jan 13	tid. Infus. 10cc	105	105	7	14	1.	3.		2.	1.5	6.		4.	1.	3.5		3	130-70(Jan 3)	
14	omitted 10cc.tid.		159		13		2.5		1.	±1.	9		2		6.		1	Not	20
am10 15			155		13	±.5	3.		1.	±1.	8		1	±.5	6.		1	followed.	38
3pm.		100	100	7	15	.5	3.		1.	1.	4		2.	1.5	7.		2		
2.55pm. - 16			155		15		3.		1.	.5	3.		.5	±1	6.		1		10

P. B. B. H. Med. No. 2081. Diagnosis: Chronic myocarditis; chronic nephritis; auricular fibrillation.

Date 1914	Digitalis	A rate	V rate	P-R time 50th sec.	R-T time 50th sec.	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B. Press.	P. Def.
						(in mm.)				(in mm.)				(in mm.)					
Dec. 27	Digitalis folia		.1gm.	tid.	2 pm.														
28	" " "	480*	120		13	±.5	7.		-.5	±.5	5.	-1	-.5	±.5	1.	-3	+.5 -.5	160-85	35
30	" " "	420*	120		13		9		-1.		6	-1	-1.	±.5	1.	-5	+.5 -.5		25
31	" " "	425*	114		14		12		-2.		6	-1	-1.5	±1	1.	-8	+.5 -.5	154-84	10
1915																			
Jan 1.	" " "	440*	117		14	±1.	14		-2.		9	-1.	-2.	±1	1	-8	+.5 -.5		
2	" " "	450*	109		16		11		-3	±1.	11	-1	-2	±1.5	1.	-3.	-		10
3	" " "	480*	86		16	±.5	11		-3.	±2	10		-2 +1	±2.	1.	-7.	-	144-80	0
4	omitted 6pm.	420*	92		16	±.5	11		-3	±2.	11	-2.	-2 +1	±1	1.	-5	-	(130-78, Jan5)	5
8		450*	70		16	±.5	11	-1.	-1 +.5	±1	8	-1.	1.	±1	1.	-5	.5	(130-77, Jan9)	5
11		440*	84		16	±1	15	-.5	-.5 +.5	±.5	6	-1	1.	±1	1.5	-9	1.		5
14		430*	84		17	±1	11		.5	±1.	8	-.5	1.5	±1.	1.5	-5	1.		
15	Digitalis folia		.05gm.	tid.														115-56	0
16	" " "	400*	72		17	±.5	11	-.5	.5	±.5	8	-.5	1.5	±1	1.	-5	1.	105-50	5

* Approximate rate.

P. B. B. H. Med. No. 2258. Diagnosis: Chronic cardiac valvular disease; mitral insufficiency; cirrhosis of the liver.

Date	Digitalis	A rate	V rate	P-R time 50th sec.	R-T time 50th sec.	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B. Press.
						(in mm.)				(in mm.)				(in mm.)				
1915 Jan 31	Infus. 10cc. tid. (3 pm)	70	70	11	18	1.	8.		1.2	1.2	6.		1.	1.	2.	-2.	-1.	155-60
Feb. 1	" " "	72	72	10	19	.5	5.5		1.	1.	8.	-1.	1.	.5	1.5	-1.	-1.	
" 2	" " "	72	72	11	20	1.5	9.		1.	1.5	7.	-1.	-.6 +1.2	.6	1.5	-1.5	-1.2	140-80
" 3	" " "	70	70	10	19	1.2	6.		1.5	1.2	8.		-.5 +1.5	.8	2.	-2.	-1.5 +.5	
" 4	" " "	71	71	10	18	1.	9.		1.5	1.3	8.9		-1.5 +1.5	.5	2.	-2.	-2.	
" 5	" " "	72	72	10	18	1.	9.		-1. +1.	+1. -1.	7.	-1.	-1.5 +1.5	.5	2.	-2.	-1.5 +.5	
" 6	" " "	68	68	12	18	+1. -.5	8.	-1.	-1. +.1	+.5 -.5	6.	-1.	-1. +1.	.5	1.5	-2.	-.5	
" 7		80	80	12	18	+1. -.5	9.		-1. +1.	+.5 -1.5	7.	-2.	-1.5 +1.5	---	2.	-2.	-1. +2.	
" 8		76	76	11	17	+1. -.5	10.		-1. +1.	+1. -1.	8.		-2. +.5	+.5 -.5	2.	-4.	-2.	
" 9		69	69	11	18	+1. -.5	7.	-.5	-1. +1.	+1. -.5	6.		-2. +.5	.5	2.	-2.	-2.5	

P. B. B. H. Med. No. 2257. Diagnosis: Syphilitic aortitis; aortic regurgitation; nephritis, chronic (?); hypertension.

Date 1915	Digitalis	A rate	V rate	P-R time 50th sec.	R-T time 50th sec.	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B. Press.	P. def.
						(in mm.)				(in mm.)				(in mm.)					
Jan. 31	Infusion 10cc. tid.																	138-60 (Jan. 30)	
	1-30 pm.	84	84	9	18	2.	5.	-.5	1.5	1.5	9.5	-2.	3.	1.	3-5	-3.	1.2		
Feb. 1.	" " "	72	72	10	16	.5	6.	-1.	1.5	1.5	10.	-2.	3	1.	3-6	-1 to -3	2.	155-50	
2	" " "	72	72	10	17	.5	4	-.5	1.	.5	8.5	-1.	1.6	.2	3-7	-1.	.5	164-55	
3	" " "	71	71	9	18	.5	6		1.	1.5	10.	-1	1.5	.4	2.	-4.	.2		
4	" " "	67	67	10	18	.5	5		.5	.7	7.	-1	.5	.2	2.	-1.5	.2	170-50	
5	" " "	67	67	10	20	.5	6.		.5	1.	6.	-1.	1.	+.5 -.5	2.	-3.	-.5 +.5		
6		64	64	10	20	.5	5	-.5	-.5 +.5	1.	9.	-2.	-1. +1.	+.5 -.5	3.	-2	-.5 +.5	170-25	
7		67	67	10	19	.5	6.		-.5 +.5	1.	7.	-1.	-.5 +.5	+.5 -.5	2.	-2.5	-.5 +.5		
8		67	67	9	18	+.5 -.5	5.		-.5 +.5	1.	9.	-.5	-1. +.5	+.5 -.5	1.5	-4.	-.5 +.5		
9		69	69	8	19	+1. -.5	8.		-1. +.5	+1. -.5	10.	-3.	-1. +1.	+.5 -.5	4.	-2.5	+.5 -.5		
19		103	103	8	16	+1. -.5	6.	-1.	-.5 +.5	1.	8	-2.	-.5 +.5	1.	3.	-1.	-.5 +.5		

P. B. B. H. Med. No. 2092. Diagnosis: **Paroxysmal tachycardia.**

Date	Digitalis	A rate	V rate	P-R time 50th Sec.	R-T time 50th Sec	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B.Press. P.Def.
							(in mm.)				(in mm.)				(in mm.)			
1914 Dec.																		
28		244?	244		?		3.	-1.			12.				12.			94-96
29	.1gm. q 4hr.	240?	240		?		1.5				18.				7.			
30	" "	260?	260		?		2.	-1.			12.				12.			
31	.1gm tid	At 6 A.M. rate fell to 110. Next tracing taken at 10 A.M. showed normal rhythm. Tracing lost.																
Jan. 1	omitted	70	70	7	16	1.	2.		-1.	2.5	9		-.5 +1.5	2.	5.5		-.5	
2		68	68	7	17	1.	3.5		-.5 +.5	2.	8		-.5 +.5	3.	4.		1.	
3		76	76	7	17	1.5	5		-.5 +.1	+2.5 -.5	8.		-.2 +.5	+1.5 -.5	1		+.5 -.5	100-66
4		70	70	7	17	1.5	6		-.5 +1.	+2.5 -.5	8		1.	+1.5 -.5	2		+.5 1.0	
5																		114-84
6		72	72	8	18	1.	5		1.5	2.	8	-.5	1.	+1.5 -.5	3		-.2 +.2	

P. B. B. H. Med. No. 2111. Diagnosis: Nephritis, chronic; hypertension; chronic myocarditis; pericarditis, acute fibrinous.

Date	Digitalis	A rate	V rate	P-R time	R-T time	Lead I P	R	S	T	Lead II P	R	S	T	Lead III P	R	S	T	B. Press P.Def.
				50th. sec.	50th. sec.		(in mm.)				(in mm.)				(in mm.)			
1914 Jan. 2	6 P.M. folia .1 tid																	170-110
3	" " "	100	100	9	16	.5	5.		-.5 +.5	.5	2.5	-1	-2 +2	.2	.5	-4	1.	189-110
4	" " "	94	94	10	16	1	8		-1. +.5	1	6.	-3.	-1 +1	1.	1.	-7.	1.5	
6	" " "	90	90	11	16	1	7		-1. +.2	1	6	-2	.5	.5	1	-6	1.	
7	omitted 12 M. infus. 10cc 2 P.M. tid.																	
11	" " "	71	71	11	17	1	8	-1	-.2 +1	1	8	-5	1.	.5	1.5	-8	1	175-89
15	Discont. "	72	72	11	18	1	8		2	1	7	-4	2	.5	1.5	-8	+.5 -1	180-110
18 (19) (27)	Resumed make 10cc tid	72	72	11	18	.5	5	-2	1	1	4.5	-4	.5	1	1.5	-7	1.5	220-110 (1-23-15)
28	" " "	70	70	11	19	1	8		1	2	6.5	-3	1.	1	1	-6.5	.5 -1	175-80 (1-27-15)
Feb. 2	" " "	90	90	10	18	1	6.4		.5	1.5	5	-4	1	.5	2.	-5	.5	
4	(omitted 2-3-15, 11 a.m.)	90	90	9	17	1.2	7		1.5	1.5	4.5	-4.5	.8	.5	.5	-6	.2	185-115
8		76	76	12	22	+.5 -.5	4.		4.	1.5	3.	-2.	3.5	.5	-	-3.5	-1.	

systole are relatively much smaller than those in the corresponding diastolic pause.

Mackenzie[1] states that even a slight increase in the diastolic rest of the heart incident to decrease in rate adds remarkably to the efficiency of its action. Now, entirely apart from increased efficiency due to lengthening the rest period, in accord with principles of mechanics it would appear that with increase of the length of systole there would be a resulting increase in the mechanical advantage of the heart's action and in the work done by the heart. So if we may consider an increase in the length of systole a direct effect of digitalis or even an accompaniment of the slowing of digitalis, we have at least a suggestion of another part of the mechanism through which digitalis increases the heart's efficiency.

Decided variations in wave amplitude appear in some of the tracings. No. 2081 showed in leads I and II a decided increase of R and T waves during the first six days of treatment. The S wave also is considerably increased in lead III. No. 2141 showed an increasing T, wave in all three leads. In 2081 the R wave of lead III was increased, corresponding to the period of digitalis medication; and the T waves in leads I and II showed similar variations.

Diphasic P waves appeared in 2257 and 2258 in all three leads; in 2092 the same was seen in leads I and II; and in 2111 in leads I and II. In all of these cases the transformation was gradual, the waves swinging almost imperceptibly from the usual form into the diphasic, which condition became more or less marked, and in some cases swinging back in the same manner to the original form.

Changes were to be noted in the T wave in a number of the cases such as Cohn, Fraser and Jamieson[2] have described. No. 2081 showed a T wave at first inverted in all three leads, changing gradually through the diphasic form to become permanently upright. No. 2257 showed a similar transformation, but in the opposite direction; and 2258 the same change in leads I and II. In 2092 the series in all leads began with diphasic T waves which became upright. In 2111 the same changes appeared in leads I and II. No. 2061 in lead III showed a tendency

[1] Mackenzie: Diseases of the Heart, London, 1914, p. 377.

[2] Cohn, A. E., Fraser, F. R., and Jamieson, R. A.: The Influence of Digitalis on the T Wave of the Human Electrocardiogram, Journal of Exp. Med., 1915, Vol. xxi, p. 593.

toward the diphasic form on two occasions toward the height of the digitalis effect.

Variations in the Q waves were to be detected, in some cases periodic appearance and disappearance of the wave; but in no instances do the changes appear to bear any relation to the effect of the digitalis. The measurements of these waves do not appear in the tables.

In only one case, No. 2061, was the digitalis pushed till the "coupling" effect was obtained. It is interesting to note that on the two occasions when this effect was produced in this patient the complexes of the extra systoles were identical. Also on one occasion while the patient was not receiving the drug a single extra ventricular systole recorded was of the same form as those appearing in the same lead at the height of the digitalis treatment.

Vagus stimulation was tried on several occasions with the patient 2141, a case of auricular flutter. In all cases the stimulation was applied by means of digital pressure; and so could not be absolutely standardized. However, in each case the pressure was carefully applied and was probably approximately uniform. Vagus stimulation at intervals of several days during the course of the digitalis medication produced progressively increased effects in ventricular slowing. On the first of these trials with left vagus pressure, which was found invariably to produce the most effect, it was possible to obtain a blocking of only two ventricular beats with possibly a slight persistent slowing of the auricular rate. Eighteen days later, the time of the last trial, similar pressure produced a ventricular block which would correspond to about seven beats; and a much more marked persistent slowing of the auricle than the first trial.

SUMMARY.

1. The cases in which digitalis produces marked slowing of the heart are cases of abnormally rapid rate; the drug in ordinary doses appears to have little or no effect upon rates which are normal. The ventricular slowing may be produced in cases of normal auriculo-ventricular sequence and in cases of auricular fibrillation and auricular flutter.

2. In some cases of normal rhythm under digitalis treatment there is a distinct increase in the P-R interval; and an accompanying increase in the R-T interval. In some cases of fibrillation also the increase in the R-T interval is found. In most instances these increases are coincident with a decrease in the rate and hence accompany an increase in the length of the whole heart cycle. A possible factor in the improvement of the heart's action under digitalis may be the increased mechanical advantages resulting from the increase in the total length of the cardiac systole.

3. Transformations in both P and T waves appear coincidently with and apparently related to the digitalis treatment. These variations are, however, not constant.

4. A single case in which digitalis coupling occurred shows, in all instances of the extra systoles, complexes of the same type, indicating a common focus of origin.

5. A single patient showed a much increased susceptibility to slowing by vagus pressure during the digitalis treatment.

EXPLANATION OF TABLES.

In the tabulations of measurements in individual cases—indicates that the deflection was downward; $\pm$ or $\mp$ that it was diphasic, first upward and then downward or first downward and then upward. When no sign precedes the figure this means that the deflection was upward.

THE ABNORMAL PARENT.

BY ARTHUR H. RUGGLES, A.M., M.D., PROVIDENCE, R. I.

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FROM the recent contributions to psychiatry we have learned much about personality, symptom-complexes and heredity, but there is one phase of heredity which I think has been insufficiently considered, that is the abnormal parent. The records of a large percentage of nervous and mental cases state that there is no hereditary factor in their present illness. A close examination of one or both of the parents, however, very often reveals conditions which the trained observer at once recognizes as important factors in the causation of disease of the nervous system. While many fathers and mothers of our cases are not and cannot be classed as insane, nevertheless, in very many of the cases one or both exhibit inherent defects of nervous mechanism. These defects result in an imperfect nervous endowment in their offspring and manifest themselves as neuroses and psychoses. These parents, ordinarily classed as not insane, and usually as not nervous, but who upon expert examination reveal well-marked deviations, I have chosen to describe as abnormal parents. It is this subject of the abnormal parent, and its relation to nervous and mental disease, that I wish to consider in this paper. It is my belief that a careful study of the endowment of the parents will lead us to greater accuracy in diagnosis and prognosis of our cases. It will be of the greatest service in furnishing us data to distinguish purely transitory mental states from those more deeply seated ones, which are referable to congenital defect of mental endowment. A better understanding of the morbid states we so often find in the parents of our patients may give valuable evidence concerning practical matters of eugenics, and may serve as a stimulus to more detailed investigation into the various types of abnormal parents, and into the question as to the relationship of these types to certain classes of disease in the offspring.

Anyone who has dealt with the elusive subject of personality, will realize how difficult a task I have undertaken, and agree that a word picture of personality is a most unsatisfactory thing. Indeed, when one attempts to make clear the deviation of a normal personality into the field of the abnormal, it is like trying to draw a word picture of the subconscious or of the fourth dimension.

When I first began to tabulate facts about the patients' parents, I thought I had discovered a parent characteristic of the dementia precox patient, and tried to form a composite picture of such a parent, but soon learned that such parents were not exclusively confined to the dementia precox offspring, and that the dementia precox group was being split up and differentiated too much to warrant such an undertaking.

With our present limited knowledge of abnormal psychology as applied to personality, and without more scientific tests of judgment, insight and emotional reaction, one can do little more than call attention to some of the evident abnormalities in parents of patients suffering with neuroses and psychoses, and must leave for future investigation the different groups of abnormal parents. In our anamnesis we are very prone to ask, "Is there any nervous or mental disease in either of the parents?" No. "Any alcoholism or epilepsy?" No. Then we enter in our family history—"Father and mother alive and well, no history of nervous or mental disease," but when we have spent a few hours with these same parents at our office or on the hospital visiting-days, we realize how far from mentally "well" they are; and it is with the hope that I may in a small measure aid in the study of the peculiarities of these too often recorded "well" fathers and mothers that I have undertaken this work. No doubt if we have the time and patience to make more accurate records of the personality of parents we shall again be brought face to face with the tremendous importance of the defective material of which our patients are made. If this study of the make-up of parents proves to be of real value, it seems to me it will become an important part of the duties of our field workers to meet and study the fathers and mothers of our cases, when they are living, and to investigate as to their make-up, from relatives and friends, when they are not living. It is often found that one parent only is of the abnormal make-up, and in these cases it usually transpires that the patient resembles that parent in both physical and mental characteristics; in other instances both parents will present many, if not all, of the morbid features to be described, and in these cases all children will show deviations from the normal.

No doubt my work will meet with the same criticism that has been made of some of the other investigations into personality, namely, that one should have control cases, that is, a study should be made of parents with children who are not suffering with neuroses or psychoses, in order to find out what percentage of these parents can be called abnormal. Such a study would be valuable, but would demand more time than I have been able to give, and the difficulties of it are obvious; and I think we shall all agree that individual differences and peculiarities are the rule and not the exception. But it is not with normal differences that I am dealing, but with frankly abnormal ones. If we can show that even a small percentage of our patients are the children of parents, previously not recorded as nervous, peculiar or insane, but who, upon careful observation prove to be of the type I have elected to term "abnormal," we shall have added something to the knowledge of the etiology of mental disease. This study may also help us to recognize some of the abnormal types, so that we may advise against their marriage with others of their kind, or to recognize the pre-psychotic difficulties of adjustment in their offspring. I am quite sure that a study of personality will also lead us to recognize certain individuals who are quite within normal limits, and whose children are assured the heritage of a good nervous system; and, likewise, careful study of the abnormal parents will lead us to recognize types of parents who are prone to have abnormal children.

In certain of the psychoses, we are often met with the question, "Why should my child be insane, there has never been any insanity in the family?" The reply has usually been, "It is one of those conditions for which we as yet know no definite cause," or, "He must have been endowed with a defective nervous system."

I was recently puzzled in a case of dementia precox, to find in my history-taking, that, as far as could be ascertained, both father and mother, as well as several other children, seemed to be quite normal, but more intimate acquaintance proved that the mother was morbidly sensitive, inclined to depression and constant introspection, and that the father was impulsive, stubborn, and egocentric, and that other children were hardly to be classed as normal.

In another case, a psychopath, I learned that the father of the boy had had a mental upset at twenty-three, characterized by fears, indecisions and depression shortly before his marriage, and who, even to this day, has to be "shielded from worry," and to devote several months of each year to regaining his nervous stability after his arduous duties as a teacher in one of our large colleges. In spite of the fact that one of his children was suffering from a mental breakdown, and that two others were described as being less "well poised" than my patient, his marriage was pointed to as a success by his wife, who I think might be fairly accused of having poor judgment, when she was told that her son should not marry.

A third case, whose parents are described as being well, shows upon investigation, the following: A mother, always morbidly sensitive, emo-

tional, lacking in normal insight and judgment, and a father with rather well-marked emotional blunting, always tangled up in a mass of unimportant details, never seeing the evident and important facts directly before him, having frequent periods of marked irritability, and lacking insight into any of his own or the family's limitations.

Still another case that rightly belongs here is one of dementia precox, whose mother is always spoken of as devoted to her children, but who was found to be of the type who never allows her children to mingle with others, always shields them, and never allows them any independence of thought or action,—she herself made few friends and was morbidly sensitive to criticism. The father was a man high in financial affairs, but overbearing in manner, egotistical, obstinate, irritable, and more than moderately alcoholic.

I might multiply these examples from cases that I have personally studied, but these four illustrate some of the trends found in a large percentage of parents of the cases, whose etiological factor is not found in exogenous causes.

These parents are not necessarily lacking in intellectual attainments; in fact are often brilliant along certain lines, but are seldom well-balanced, apt to be egocentric, lacking in a normal degree of insight and judgment, and usually presenting one or more of the following characteristics: emotional instability, lack of power of sustained attention, suggestibility, indecision, morbid fears, jealousies or suspiciousness, given to introspection, seldom taking a broad outlook or seeing the important things of life, but exhibiting an over-conscientiousness, which constantly leads to their entanglement in a mass of petty details. We meet with them in ranks of new cults; they fill our newspapers with letters of complaint; they furnish large numbers of cases for the divorce and bankruptcy courts; they are constantly a little out of adjustment with the normal order of things. These parents are of the type we often hear spoken of by those understanding them best as "peculiar," "queer," or that much abused term, "nervous," but by themselves or their near relatives we are usually told that they are quite normal, and it is by a more careful study in our history-taking that we shall learn of these hereditary factors that play so great a part in making up a large percentage of the neuroses and psychoses.

Some of the parents described, if subjected to present-day mental examination when they were in the third decade, might have been classed as dementia precox cases, if we had had that term, and, undoubtedly, some few did belong in this group. Those cases that might have been so classified were of the type that did not deteriorate seriously, and were, at least in a measure, able to adjust themselves to their environment as they grew older. Others have certain psychasthenic or neurasthenic traits, as the preceding catalog of symptoms indicates, but they are allied to these conditions rather than typical of them. Most of the parents I have tried to describe could not, indeed, be grouped among the psychoses or neuroses, but were those individuals possessing impaired energy of their nervous system, and their offspring have started life handicapped by an inherited defect in nervous mechanism. A study of these abnormal parents will give us valuable information regarding heredity and a better understanding of the development of the disease processes in our patients.

Clinical Department.

A CASE OF TRAUMATIC FEMORAL ARTERIO-VENOUS ANEURYSM.

BY EDWARD A. SUPPLE, M.D., BOSTON.

David P., aged 47. Occupation, butcher.
Family History. Negative.
Past History. Negative.
Present Illness. Patient while at work accidentally stabbed himself with a sharp pointed knife in the right groin an inch below Poupart's ligament, just beneath the femoral ring. Profuse hemorrhage followed. Man fainted in his store. Physician called, who checked hemorrhage by tight bandage. Patient removed to his house, where in an hour secondary hemorrhage developed, and was again controlled by a tight bandage. Sent to St. Elizabeth's Hospital in that condition.

Physical Examination. Patient extremely pale, anxious, pulse 120, weak and thready. Bandages removed from thigh, where could be seen a small incised wound about a half inch long, through which was oozing bright red blood. Underneath wound was a small mass size of an English walnut. On palpation a distinct thrill could be felt, and by stethoscope a distinct bruit could be heard. Ecchymosis extended through the entire anterior and lateral aspects of the thigh to the knee. Mass lay in the upper part of Scarpa's triangle, an inch below Poupart's ligament, just over the femoral artery. Owing to the patient's poor condition, and owing to the fact that no hemorrhage was taking place, I decided to wait and watch conditions. Under careful observation, the patient's pulse became stronger and slower, but mass in the groin kept steadily growing larger, with more pronounced thrill and bruit, yet without any active hemorrhage.

Seven days after entrance the mass became the size of an orange, and more fresh blood seemed to be oozing through the wound. Fearing a probable rupture of the mass with fatal hemorrhage, I decided to explore the cause. During all this time a faint pulsation could be felt over the dorsalis pedis artery of this leg. Patient was informed of the extreme danger of the operation and the possibility of an amputation of the leg at the thigh, but consented to allow me to operate. Patient prepared for operation in the usual manner.

Operation. Incision made one inch above and parallel to Poupart's ligament down to peritoneum. Peritoneum peeled back, external iliac artery found

and clamped with rubber tipped clamp. Tourniquet had been placed beforehand, around thigh, above knee. I then made an incision over the femoral artery just beneath the mass, which consisted of a blood clot. Mass dissected away down to the femoral vessels. Owing to profuse venous hemorrhage, in spite of the tourniquet, the femoral vein had to be clamped below the mass. Exploring the vessel, a true arterio-venous aneurysm was found just an inch below the femoral ring. Artery was tied and cut above the aneurysm. To control the venous hemorrhage, I was obliged to tie and cut the femoral vein also. The clamp was taken from the external iliac artery and wound above Poupart's ligament was closed. The tied end of the femoral artery could be seen pulsating underneath the ring and above any one of its branches in the thigh. The wound made over the mass, down to the vessels in Scarpa's triangle, was left open to granulate in, and simply packed with dry gauze. Tourniquet removed and found that all hemorrhages had been controlled. Realizing now that both femoral artery and vein were tied off at the femoral ring, patient was placed in bed, and I expected in a few days to amputate at the thigh, as I felt from the cutting off of the blood supply gangrene would set in. Leg elevated underneath a cradle and heaters placed from ankle to thigh, and treated this way continually. The foot itself never became cold, but no pulsation could be felt anywhere along the leg until the fourteenth day after operation, when a faint pulse could be felt just above the large toe. Patient's general condition improved daily. Wound over Scarpa's triangle healed fast, and patient was able to sit up in a chair four weeks after the operation. Both wounds absolutely healed in six weeks. Patient was able to walk about without any discomfort or lameness. Patient was discharged well, beginning of the seventh week after the operation. At the time of discharge, strong pulsation could be felt over the internal malleolus, and no edema of the foot or leg, even when patient was up and about daily.

Patient seen at frequent intervals after discharge from hospital. Three months after discharge from hospital, patient worked daily at his trade, and, although on his feet the entire day, there has been no edema or swelling of the leg or foot. He is now in perfect physical condition.

Medical Progress.

PROGRESS IN TUBERCULOSIS.

By John B. Hawes, 2d, M.D., Boston.

and

P. Challis Bartlett, M.D., Boston.

There have been no striking developments in diagnosis, prognosis, or treatment of tuberculosis during the past year. What has been accomplished is more in the way of giving emphasis to physicians and to the laity to already well known facts and methods, rather than of demonstrating anything new.

Diagnosis. The various x-ray workers seem to be reaching a saner and more conservative point of view than heretofore. A review of the literature on this particular line would seem to show that roentgenologists are coming to realize that the part which the x-ray plays in diagnosis, although a valuable one, is not the only part; that the x-ray simply gives a certain amount of additional information, and that it can never take the place of older and well-tried methods of diagnosis. Giffin and Sheldon,[1] although still claiming too much for the x-ray as a means of diagnosis, wisely call attention to the fact that it is the man who interprets the x-ray plate, rather than the x-ray plate itself, that makes the diagnosis.

The complement fixation test in tuberculosis is coming to be more used than in the past. It is doubtful, however, if it will give any more information, or as much as the tuberculin test already does. McIntosh, Fildes and Radcliffe[2] believe that the reaction is specific in that a positive result indicates tuberculosis with certain exceptions, and go still further in their claim that a positive reaction indicates active tuberculosis, not merely a tuberculous infection. They qualify this statement by concluding that a positive reaction is "of considerable value." Dr. E. R. Baldwin, who may be regarded as the greatest authority on the subject in this country, would probably confirm this statement that the test is of considerable value.

Rivière[3] discusses a new sign and its value in diagnosis. This sign consists of characteristic bands of percussion impairment of constant position, shape and size. These can be found by skilful percussion before any other signs of phthisis and in certain cases before symptoms develop. They do not depend upon structural changes, but are of reflex origin. Rivière belongs to that English school which puts far greater value on percussion than on any other method of physical examination. His observations need to be confirmed before much value can be attached to them.

In differential diagnosis, Landis and Lewis[4] discuss the question of latent syphilitic infection in the lungs. This is an excellent review of this most important and difficult subject.

Davis,[5] in an interesting article on streptothrix infections, believes that pulmonary processes due to this cause are more common than is generally supposed, and that such processes cannot always be differentiated clinically from tuberculosis. The organisms are acid and alcohol-fast, but not as acid-proof as the tubercle bacillus. They are relatively non-resistant to antiformin. Only certain strains are pathogenic to man and beast.

Hawes,[6] discussing errors in diagnosis of chronic lung diseases, in addition to syphilis, calls attention to new growths, influenza processes and chronic pneumonitis as possible sources of error.

Peers[7] emphasizes the frequency of tuberculosis as the cause of symptoms of all kinds. He urges that in every obscure medical case, the physician should at least consider tuberculosis as a possibility, and that one or two negative sputum examinations should not entirely rule it out. On the other hand, he states that a positive tuberculin test does not necessarily mean that the patient needs treatment. This is a wise remark.

Townsend[8] has contributed a good general article on early diagnosis. Ford[9] discusses the lack of early diagnosis and makes the statement, which is unfortunately only too true, that the average general practitioner does not know how to diagnose pulmonary tuberculosis. He blames the medical schools for this, in that this subject is not given sufficient attention.

Klotz[10] in an excellent article discusses the so-called Kroenig's isthmus and its value in diagnosis. He concludes that unless the disparity of the apical percussion field as expressed in terms of Kroenig's isthmus is very marked, it does not necessarily point toward tuberculosis on the corresponding side, that such disparity is of much less significance on the right side than it is on the left, and that in most instances the disparity of the apical percussion fields is simply due to anatomical changes not relative to tuberculosis. It is high time that these conclusions should be reached. Much time is wasted by physicians and medical students in endeavoring to find one or two centimeters' difference between the bands of resonance at each apex, and much harm is done by deducing certain things from such differences.

Brown[11] and Hawes[12] in separate articles have presented the subject of early diagnosis of tuberculosis in succinct and almost diagrammatic form. These articles are of value to the general practitioner, who rarely has time or inclination to read or digest longer and more detailed discussions on the subject. Hamman[13] has likewise written an excellent article on early diagnosis.

Treatment. Tuberculin is coming to be used more in non-pulmonary forms of tuberculosis and somewhat less in the pulmonary forms. Litzner,[14] discussing focal reaction in a tuberculin test, warns against the use of tuberculin in ambulatory treatment where there is marked focal without a general reaction. Crofton[15] urges prophylactic inoculation against tuberculosis in families where there has been marked exposure to the disease. He believes that a short course in tuberculin is of great value in preventing later development of tuberculous disease. Peters,[16] discussing the value of tuberculin, states as follows: "As yet we have no specific for tuberculosis, and neither tuberculin nor any other factor in the treatment of this disease will raise the dead consumptive. Yet I feel that conscientious and careful use makes tuberculin an agent for great good." If he added to this statement conscientious and careful use "in a sanatorium where the patient is under absolute supervision," his conclusion would be of still greater value.

Peters[17] uses blood pressures as a guide to exercise. When a patient shows a drop of six or more millimeters after he has had a rest following his exercise, or a marked drop on returning from exercise, he believes that the patient has done too much. If he has only a slight drop, he repeats what the patient is already doing until an even standard is maintained, when it is again increased. His observations should be confirmed. If they are found to be correct, this will give a valuable gauge whereby to measure the amount of exercise a patient should take.

Hawes[18] takes up the subject of tuberculosis in elderly persons as to diagnosis and treatment. He is unable to confirm Stoll's[19] statement that a positive d'Espine sign in elderly persons means tuberculosis rather than a chronic bronchitis. He calls attention to the fact that elderly persons rarely react well to the strict régime of sanatorium life.

Tuberculosis in Childhood. Park,[20] of the New York Health Department, discusses the transmission of tuberculosis in childhood, particularly with reference to tuberculous milk in New York City. Frazer[21] considers tuberculosis a true children's disease, and although presenting nothing new, reviews the diagnosis of this condition in childhood. Howell[22] has made a careful study of the signs and symptoms of enlargement of the bronchial glands. He emphasizes the fact that such enlarged glands are not necessarily tuberculous. This is an important point and it should be constantly borne in mind. Rieha[23] urges that prophylaxis take precedence over treatment in tuberculosis work in children. Pollock[24] describes the measures which should be taken from the broad administrative point of view to control tuberculous infection in early life. Stoll[19] discusses the value of the d'Espine sign. He again emphasizes the fact that the presence of this sign means enlarged bronchial glands, but that these glands are not necessarily tuberculous. Its presence in a delicate child is suggestive of tuberculosis, but not necessarily conclusive. In elderly persons a positive d'Espine sign speaks for tuberculosis rather than for a chronic bronchitis. This latter statement has not been confirmed, nor does it seem to rest upon any sound pathological basis. Garvin[25] discusses tuberculous infection in childhood. Whether or not the individual will develop pulmonary disease in later life depends upon the quality and quantity of his first infection in early life.

The fundamental thought in prophylaxis must be directed to the child and to his family and home surroundings. The next important point of any tuberculosis campaign should be directed against those factors which will cause a later reinfection with the germs already present. Cattermole,[26] basing his work on a large number of

tuberculin tests on children in Colorado, discusses the general question of tuberculous infection in childhood. Woodruff,[27] discussing the tuberculous child, emphasizes the value of rest and exercise in proper proportions and the need of prolonged treatment after the child has left the sanatorium or has ceased to be under absolute supervision.

Non-Pulmonary Tuberculosis. Gage[28] presents a careful study of acute tuberculous inflammation of the ileocolic glands simulating acute appendicitis. Risley[29] considers the same subject. Acute inflammation or enlargement of tuberculous mesenteric or retro-peritoneal glands often simulates acute appendicitis. It may be impossible to make a correct pre-operative diagnosis in these cases. Many people, however, have such enlarged glands with symptoms. They are usually in two types, the chronic and the acute fulminating. Hawes[30] has reviewed the cases at the Massachusetts General Hospital and made a careful study of the signs and symptoms of this condition.

Burnham[31] believes that tuberculin, especially sensitized B. E., is of great value in various forms of surgical tuberculosis, and should be used in dispensaries and elsewhere where a sanatorium régime is not possible. It is evident that this is coming to be the opinion held everywhere in this country. It is important, however, to remember that tuberculin alone is not the chief factor, but that tuberculin, good hygienic treatment, and wise and conservative surgery each must play its part in the treatment of non-pulmonary tuberculous disease. The profession, and especially the surgeons, are coming at last to realize that tuberculosis, whether in the lungs or elsewhere, is always the same, and that the treatment should be directed to the patient who has the disease rather than to the disease itself.

Artificial Pneumothorax. One notes with pleasure and relief that artificial pneumothorax is at last finding its proper position in the treatment of pulmonary tuberculosis. It has been through the stage when it was hailed as a cure for all forms of phthisis. While there are still a few hyperenthusiasts yet maintaining this position, the great majority of the profession realizes that it plays only a comparatively small part in treatment.

Jacot[32] describes a number of cases of purulent pleurisy complicating artificial pneumothorax. Lapham[33] finds that 20% of the cases of pneumothorax which she discusses developed pleurisy subsequent to this procedure.

Woodcock[34] discusses the dangers of artificial pneumothorax and comes to wise and sane conclusions. Bullock and Twitchell,[35] in an excellent article on the exudates in pneumothorax, urge that this treatment be employed in carefully selected cases only and where sanatorium and climatic treatment can likewise be employed.

Sloan and Hamman[36] report their results in the use of artificial pneumothorax during the past four years. The induced pneumothorax treatment applied to 40 patients with moderately advanced tuberculosis, 4 with advanced pulmonary disease, and 1 with bronchiectasis, influenced the progressing course of the disease little or not at all in 60%. It did cause temporary improvement in a number of these cases, and to a small number has brought about perfect health and complete working capacity for two and one-half years.

Pathological and Bacteriological. Hart[37] discusses the factors which coöperate in producing tuberculous apical lesions. He presents many arguments to prove his claims in regard to the mechanical predisposition to the apical lesions because of the closure of the superior aperture. He describes cases where on autopsy marked anthracosis, but no signs of tuberculosis, was found at the apices. In these cases, whether tuberculosis was present or not, there was always something abnormal in the apical aperture preventing the free ventilation of this region.

Gilbert and Gregg[38] discuss the virulence of various strains of human tubercle bacilli. The use of living bacilli for the production of immunity has been of little avail because of our inability to control the exact number and the virulence of the bacilli. Their work goes to show the great variation in the lethal dose of different virulent cultures. Petroff[39] has made a distinct advance in the methods of growing the tubercle bacillus by the introduction of his new medium. This medium contains one part of meat juice, two parts of egg, white and yolk, gentian violet sufficient to make a solution of 1:10,000.

Austrian and Hamman,[40] in their investigations of tubercle bacilli in circulating blood, were unable to demonstrate the presence of tubercle bacilli in the blood in a single instance, notwithstanding the fact that many of the patients when examined were in the last stages of the disease. This statement, coming from such a source, is worthy of most serious consideration.

Baldwin,[41] discussing immunity in tuberculosis, believes that the ultimate survival of those who acquire a relative immunity against the disease will tend to diminish the severity, but that many generations may be required to accomplish this. The opportunities for infection, now universal in cities, will diminish gradually in civilized lands by lessening the danger from advanced cases as well as from bovine sources. For many years, however, "the number of carriers will increase owing to the improved care, longer life, and higher standards of living among the people." As time goes on, the amount and frequency of severe infections, however, will diminish, while the number of those with slight harmless infections should relatively increase.

Sociological. Way[42] calls attention to the importance of tuberculosis carriers and to the need of careful examination of all members of every family in which there is a known case of pul-

monary tuberculosis. The trained tuberculous subject, however, who knows how properly to dispose of his sputum and has a sufficiently aroused private and personal as well as an educated public health conscience to compel his taking proper precautions, should be free to come and go as he wills without let or hindrance, as his danger to others lies where he can almost wholly control it. This is a sane remark.

Undoubtedly as a result of the educational campaign which has been waged so constantly for the past ten years, there is developing a recrudescence of phthisiophobia which does injustice in many instances.

Stone,[43] in a good article, describes the policy of the State of Massachusetts in regard to the tuberculosis problem. Massachusetts is still, like other states, devoting its attention to segregation of consumptives and protection of the public; its real sanatorium work is, unfortunately, more in fact than in name. With the establishment of local tuberculosis dispensaries in every city or town of 10,000 inhabitants or over, and with the steady increase of local tuberculosis hospitals, he believes that the time is not far distant when the state sanatoria can devote themselves to the treatment of incipient and early cases.

Hawes[44] urges that the medical profession and local authorities devote more time and assume more responsibility toward the discharged sanatorium patient. Many relapses would be prevented were this done.

White[45] states as his belief that "any given unit of population occupying any given territory, no matter how small the unit, that can demonstrate the accomplished control of this disease will solve the problem for the whole nation." He presents a working plan whereby for each 100,000 of population there should be a hospital of 200 beds, a dispensary, an open air school, 15 nurses (of whom 5 are visiting social service nurses), and four or five physicians.

Sachs,[46] discussing the official responsibility of the city in the tuberculosis problem, has many good suggestions to make. Efficiency in this work calls for "united effort with centralization of authority."

Laryngeal Tuberculosis. Levy,[47] discussing the treatment of laryngeal tuberculosis, urges conservative treatment in early and moderately advanced cases, but that occasionally in the later stages of the disease operative measures are best.

Heliotherapy. The development of heliotherapy so that it can be carried out in private form outside of sanatoria, and in climates and localities which were formerly considered unsuited for its use, marks one of the greatest steps in the progress of this year.

Twichell,[48] in a most interesting article, describes the effects of the sun's rays on experimental tuberculosis in guinea-pigs and rabbits. In some cases the tubercle bacilli were actually killed, and in others they were restrained in their growth by direct exposure to the sun's rays.

Rubow and Würtzen[49] report favorable results with the use of phototherapy in pulmonary disease. Instead of direct sunlight, they use the Finsen rays, exposing the body gradually, as is done in cases where the sun's' rays alone are used. They urge that this method be given further trial.

Schäffer[50] describes heliotherapy as used in Denmark. He states that as long ago as 1902, sun baths were introduced as part of the routine treatment of lung and bone tuberculosis. The duration of these baths is only five or ten minutes at first, gradually increasing up to an hour. This method was never used on the patients with a tendency to hemoptysis or in progressing pulmonary lesions. He reports favorable results.

Prognosis. Metzger and Watson[51] describe their work under urochromogen reaction. They believe that its presence in a tuberculous patient is of unfavorable import. Its persistence means a hopeless prognosis, while its absence is a good sign.

Miscellaneous. Pettit[52] discusses traumatism as an etiological factor in pulmonary tuberculosis. This is an excellent article with numerous references. Trauma is never a primary cause of tuberculosis. If we believe it to be a secondary cause, the other factors which commonly contribute to the development of tuberculosis must be excluded. "For medico-legal cases the complexities of the situation are so great as to make it almost, if not quite, impossible to determine how far trauma is ever a contributory factor in the development of tuberculosis."

This statement, although undoubtedly true, is not, however, the opinion generally held by the courts. The court is not dealing with things which may be the *possible* cause of the development of tuberculosis, but with factors which may be a *probable* cause of its development. In Massachusetts, at least, this has certainly been the ground held by the Industrial Accident Board in awarding damages to plaintiffs who develop tuberculosis subsequent to an injury. Each case, of course, must be decided on its own merits, and the development of the tuberculosis must bear a definite relation in time and in other ways to the alleged injury.

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Reports of Societies.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.

A special meeting of the Middlesex South District Medical Society was held in the Boston Medical Library at noon, on Wednesday, December 15, 1915. DR. WILLIAM W. WALCOTT, district health officer of the Massachusetts State Department of Health, presented a paper on "Field Work of the State Department of Health on Communicable Diseases."* The discussion was opened by DR. EUGENE R. KELLY, director of the Division of Communicable Diseases of the Massachusetts State Department of Health.

* See JOURNAL, page 337.

Book Reviews.

The Starvation Treatment of Diabetes, with a Series of Graduated Diets as Used at the Massachusetts General Hospital. By LEWIS WEBB HILL, M.D., and RENA S. ECKMAN (Dietitian). With an introduction by RICHARD C. CABOT, M.D. Boston: W. M. Leonard. 1916.

The first edition of this convenient manual of the newer treatment of diabetes was reviewed in the issue of the JOURNAL for October 7, 1915 (Vol. clxxiii, page 551). The appearance of this second edition within so short a time is evidence of the merited success which the work has met. This second edition has been revised and enlarged to twice the size of the first. The technic of the treatment has been rewritten and facts learned in clinical experience for the past few months have been emphasized. A series of case histories, both of adults and of children, treated at the Massachusetts General and Children's Hospitals has been added, with charts representing graphically the course of progress during starvation and particularly during subsequent dietetic treatment. A section or recipes for diabetics has been added and the list of daily diets has been much enlarged and revised. There is a progressive diet list up to the fifteenth day after starvation and a new and fairly complete table of food values in form for ready reference. It is obvious that the original value of the book is much increased in this new edition, the continued success of which should be correspondingly prompt and definitive.

Manual of Surgery. For Students and Physicians. By FRANCIS T. STEWART, M.D., Professor of Clinical Surgery, Jefferson Medical College; Surgeon to the Germantown Hospital; Out-Patient Surgeon to the Pennsylvania Hospital. Fourth Edition, with 580 Illustrations. Philadelphia: P. Blakiston's Son & Co. 1915.

Dr. Stewart's Manual which first appeared in 1907, has deservedly achieved a fourth edition. Much new matter has been added and many changes inserted. The book is now a moderate sized volume of not more than 700 pages; the type is clear, the paper flat, and the illustrations good. For so small a book, it contains a surprising amount of reliable information. It reflects the views of a surgeon who, though still young, has enjoyed an extraordinarily large operative experience. It is primarily practical, and stripped of every unessential. It is a real text-book, not a compendium. The author's own technique of operation for cancer of the breast is included. The book continues to make a most favorable impression. It is strongly recommended to students.

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SOME VIEWS CONCERNING THE UNITED STATES ARMY MEDICAL CORPS.

To the physician interested in his country's welfare, no more interesting reading can be found than the report of the hearing before the Committee on Military Affairs of the National House of Representatives (Jan. 21 and 28, and Feb. 1, 1916). The subject of the hearing was "To increase the efficiency of the military establishment of the United States," and of the four hundred odd pages of the report, more than one-third dealt with the army medical corps. A number of medical men representing national and state societies testified, but the true inwardness of the situation was contained in the testimony of Surgeon-General Gorgas, who went at considerable length into the function of the army medical corps, its present condition and its needs. He submitted also the report of a French commission who had investigated the conditions responsible for the "decompensation" of the French medical service at the beginning of the war.

Our army medical corps at present consists of 443 medical officers, 91 officers of the medical reserve corps and 15 contract surgeons. Our army numbers 92,973 men, thus giving a ratio of 0.59 of 1%. The British ratio is about 1%. General Gorgas asks that the number be increased from 443 to 980, and estimates that for an army of 200,000 engaged in active service, the number of medical officers required for all purposes would be around 2500. The United States has medical stores packed and ready for immediate shipment, for 250,000 to 300,000 men.

In reply to questions about the medical reserve corps, the Surgeon-General said he considered the plan to be working out in a very satisfactory way, there being now 1460 members, of whom 200 went last year to instruction camps, while 700 are taking the four-year correspondence course offered by the army.

Several of those who testified advised an increase in the pay and in the rank of officers of the medical corps. This they thought necessary in order to obtain good men. As was pointed out, of late years the opportunities for doctors in civil practice have improved. The relative number of medical graduates in civil life has decreased 47% between the years 1904 and 1915. In other words, there is now one doctor to every 28,000 people, whereas in 1904 there was one to every 14,000. Physicians, therefore, are less likely to heed the call of service under the government. In answer to the criticism that in times of peace a larger medical corps would have no work to do, General Gorgas predicted a wider sphere of usefulness than would be found in purely military affairs. Research, public health and sanitation are fields in which those not needed for the army could be employed to good purpose.

One not infrequently hears it said that, in case of war, civil surgeons could very quickly assume the duties of army surgeons, and, aided perhaps by railroad and executive officers and the comparatively few medical officers of the regular army, could meet the problems of caring for the wounded successfully. So far as the actual surgical treatment of wounds is concerned, this is true. But as Dr. Rodman, president of the American Medical Association, said in his testimony, "I went into the army as a

contract surgeon in 1880 and served for 17 months. . . The strictly professional part of my work was the easiest part of what I had to do" Without doubt, hospital units for base hospitals, composed of carefully selected civil surgeons, would be of great value. A glance at the list of duties of the army medical corps, however, will show the need for special training. As given in the Surgeon-General's report to the chairman of the Committee on Military Affairs, House of Representatives, these are:

a. Professional care of the sick and wounded in garrison, on the march, in camp, on the battlefield, and after removal therefrom.

b. Investigating the sanitary conditions of the army and making recommendations in reference thereto, including the location of permanent camps and posts, the adoption of systems of water supply and purifications, and the disposal of wastes.

c. Making physical examinations of officers and enlisted men.

d. The management and control of military hospitals.

e. The recruitment, instruction and control of the hospital corps and the army nurse corps.

f. Furnishing all medical and hospital supplies.

g. The direction and execution of all measures of public health among the inhabitants of occupied territory.

h. The methodical disposition of the sick and wounded, so as to insure the retention of those effective and to relieve the fighting force of the non-effective.

i. The transportation of the sick and wounded.

j. The establishment of aid stations, dressing stations, hospitals, and other formations for the care of the sick and wounded.

k. The preparation and preservation of individual records of sickness and injury in order that claims may be adjudicated with justice to the government and to the individual.

l. The instruction of the troops in personal hygiene.

m. In addition to these duties, specifically prescribed, medical officers are required to act as members of retiring boards, examining boards, and courts-martial, and as instructors for the organized militia.

How many of us could, without special training, discharge these duties successfully?

AN IMPORTANT LEGAL DECISION.

THE bench of the supreme court of Wisconsin has recently afforded further arguments on the question whether diseases caused by conditions arising in the course of employment are to be interpreted as the result of accidents, under the terms of the workmen's compensation laws.

In the case at instance, an employee had died of typhoid fever contracted by drinking impure water furnished by the employer. The court decided that the death was the result of an accident, and that the employer was liable. The plaintiff filed a demurrer to the original decision of the district court, the circuit court ordered the demurrer overruled, and appeal was made to the supreme court, which affirmed the order appealed from. In rendering this decision, Justice Siebecker, as quoted in the weekly report of the United States Public Health Service, stated his opinion in part as follows:

"The inquiry is: Was the disease from which it is alleged Vennen died proximately caused by accident? Do the facts and circumstances alleged in the case set forth the conditions to entitle an employee to compensation 'for any personal injury accidentally sustained,' which was 'proximately caused by accident' while 'performing services growing out of and incidental to his employment'? We have already noticed that the alleged injury was, under the facts stated in the pleadings, received by deceased while in plaintiff's employ and while he was 'performing services growing out of and incidental to his employment.' Whether or not the alleged accidental injury caused Vennen's death is sufficiently pleaded, and remains a question for determination from the evidence at the inquest of the case. There remains the important inquiry: Do the allegations state a case showing that Vennen's death is attributable to 'accident' in the sense of the compensation act? It is urged that the contracting of typhoid disease under the facts and circumstances stated does not show that his death was due to an accidental occurrence. The term 'accidental,' as used in compensation laws, denotes something unusual, unexpected, and undesigned. The nature of it implies that there was an external act or occurrence which caused the personal injury or death of the employee. It contemplates an event not within one's foresight and expectation, resulting in a mishap causing injury to the employee. Such an occurrence may be due to purely accidental causes, or it may be due to oversight and negligence.

"The fact that deceased became afflicted with typhoid fever while in defendant's service would not, in the sense of the statute, constitute a charge that he sustained an accidental injury, but the allegations go further, and state that this

typhoid affliction is attributable to the undesigned and unexpected occurrence of the presence of bacteria in the drinking water furnished him by the defendant, as an incident to his employment. These facts and circumstances clearly charge that Vennen's sickness was the result of an unintended and unexpected mishap incident to his employment. These allegations fulfil the requirement of the statute that the drinking of the polluted water by the deceased was an accidental occurrence while he was 'performing services growing out of and incidental to his employment.' It is alleged that the consequences of this alleged accident resulted in afflicting Vennen with typhoid disease, which caused his death.

"The cases wherein liability has been found distinguish between disease resulting from accidental injury and disease which results from an idiopathic condition of the system, and not attributable to some accidental agency growing out of the employment. The latter class of diseases are held not to be within the contemplation of the act. We are of the opinion that the decision of the trial court, holding that the facts pleaded show that Vennen's death was caused by accident while performing service growing out of and incidental to his employment, is correct, and that the demurrer was properly overruled."

Justice Barnes of the same court, however, filed a dissenting opinion, in which he stated, in part as follows, the essence of his views on the subject of the interpretation of the act:

"By Section 2394-3 liability exists under the compensation act where employer and employee are under it: (1) For 'any personal injury accidentally sustained' by the employee while 'performing service growing out of and incidental to his employment, . . . where the injury is proximately caused by accident and is not intentionally self-inflicted'; and (2) for death where the employee is performing such service and where the injury causing death is 'proximately caused by accident,' and not intentionally self-inflicted. To justify recovery under this statute, where death does not ensue, there must be a personal injury actually sustained, which injury is proximately caused by accident. Where recovery is sought for death, the statute does not in express terms say that a personal injury must actually be sustained, but only that there must be an injury 'caused by accident.'

"The peculiar concern of this court is to get at the legislative intent. When the court ascertains that intent, it has not only performed its full duty, but has exhausted its legitimate powers. It has no right to curtail or extend the provisions of any statute. The compensation act as now construed by the court will, I think, add materially to the liabilities popularly supposed to exist under the act, if it does not double them. If the legislature so intended, well and good. I cannot bring myself to believe that it did so intend.

"It is a matter of common knowledge that cases of sickness and disease are much more numerous than cases of what are commonly known as accidents. The compensation act was passed after an exhaustive study of the subject of industrial insurance by a committee of the legislature, which covered a period of two years. There were two classes of acts in operation in other jurisdictions—one covering diseases and accidents; the others not, in terms at least, covering disease. If it had been the purpose of the legislature to include the large class of cases that would result from sickness, it is fair to presume that it would have done so in express and unmistakable terms.

"The law was an optional one, and is so yet. As was expected, there was a great deal of hesitancy on the part of employers about coming under it. Had it been supposed that it provided compensation for disease or sickness, it is probable that the purpose of the law would have been practically nullified. The effect of the decision in this case is, of course, conjectural, but it is not without the range of possibilities that some at least of those who are now under the act will exercise their election not to remain under it. It is now a generally accepted truism that many diseases attack those who are physically weak and run-down rather than those who are strong and able to throw off unwelcome disease germs. The weak must work as well as the strong, or else be taken care of by the public, and, should they be discriminated against in the matter of securing employment, much harm would follow. The question whether we should or should not have insurance against sickness is one of legislative policy. The manner of paying such insurance, if decided upon, is also a question of legislative policy within constitutional limits. I do not question the power of the legislature to pass an option law, such as we have providing for indemnity against disease. What I do say is that the legislature has not done so, and that the act passed has been stretched by construction so as to add to it in all probability as large a class of claims and liabilities as that actually included in the original act."

It is as difficult a matter to decide between dissentient judges as between the proverbial doctors who disagree. The arguments of both sides are well stated. Probably the mere fact of the disagreement is evidence, as in the case of Sir Roger de Coverley, or, indeed, of most subjects of human discussion, that there is much to be said on both sides.

MASSACHUSETTS GENERAL HOSPITAL.

THE trustees of the Massachusetts General Hospital have recently published in two volumes their one hundred and second annual report, including the General Hospital in Boston, the McLean Hospital and the Convalescent Hospital in Waverley. The report covers the work of these instituions for the calendar year 1915. During this period the total number of patients treated in different department of the General Hospital was 7898, as against 7741 in 1914. There were 29,213 new cases in the out-patient service.

Particular reference is made to the beginning of the new administration building on Fruit Street. Other new activities and needs of the hospital are outlined in part as follows in the report of the administrator, Dr. F. C. Washburn:

"One of the pressing needs is a country branch where we can move bed patients for convalescence. The land for such an institution is now owned by the hospital. It is a beautiful situation upon a hill on the Concord turnpike in Belmont in the rear of the land at McLean Hospital.

"A hospital for the care of people of moderate means should be erected in connection with the General Hospital for patients who should pay something to the physicians for their medical and surgical care, but who are unable to pay the full price for care in the new private ward which we are building. I would make an urgent appeal to the generosity of the community for a special gift to erect a building for this object.

"A building for children should be erected in connection with the General Hospital. The children's medical department has but seven cribs for bed patients, and these are in an unsuitable location. The need for a building for children is very considerable. It should be distinct from the buildings for adults, as the problem in the care of children—the ease with which they contract contagious diseases—makes a special plan of construction necessary.

"The addition of one hundred beds in the private hospital and sixty beds in the Bulfinch Building, which can be added when the Moseley Memorial Building is occupied, will make necessary an increase of about eighty-five nurses. A new home should be provided, perhaps upon the land owned by the hospital on North Grove Street. This home should be large enough to accommodate the immediate increase in the size of the school, and the increase which will be necessary it we are able in the future to build a hospital for people of moderate means and a children's hospital, so urgently required.

"Upon recommendation of the general executive committee, the trustees have authorized a consultation clinic for people of moderate means. The cost of the necessary laboratory tests and consultations with recognized experts has become so great that people of small means cannot obtain them individually. The plan proposes that the family physician shall bring or send his patient by letter to this clinic in order that he may obtain a correct diagnosis by modern methods and an outline of treatment, if he desires it. The patients are to pay a fee of $5 each.

"The School for Nurses at the General Hospital has had a successful year. We have been able to raise the standard of admission, so that our school is composed of a very high type of young women. The statistics of our graduates show that a very large proportion of them are filling executive and teaching positions in hospitals and that those in private nursing are in great demand.

"A nurses' home at McLean Hospital is badly needed. There is a considerable fund already established for this purpose, and it is hoped that benefactors of the hospital may add to this in the near future."

MEDICAL SERVICE IN A MUNICIPAL COURT.

AT the request of the Boston city council, the municipal court of Boston has recently issued a report presenting a statistical survey and a discussion of its work for the past fifteen years. With special reference to the evolution of probationary treatment, the report describes the work of Dr. V. V. Anderson in the psychologic study of prisoners and delinquents.

It is, moreover, recognized that this work should extend beyond the limits of the probation system, and that it demands for its full development a degree of autonomy. Upon the recommendation of the municipal court, therefore, in 1915, legislative permission was given for the establishment of a department of medical service. With regard to the work of this department, the report continues:

"Aside from the direct assistance which the court derives in a more intelligent disposition of its cases, it is to be hoped that the research data gathered in this field may aid in no small degree to point out ways in which society may relieve itself from the burden of crime. The work already done has served to accentuate the need of an institution to which the court may commit, for prolonged detention, persons not insane according to present legal standards, and therefore amenable to the criminal code, who by reason of feeble-mindedness cannot respond

to probationary treatment, and who need hospital treatment rather than penal discipline."

So much public interest has attached to this novel branch of court work that a special report about it, submitted by Dr. Anderson, is presented in Appendix C of the main report. In his conclusions from this survey, Dr. Anderson summarizes in part as follows:

"Within our criminal courts the problem of responsibility, the question of dealing justly and intelligently with offenders, has made it customary for judges occasionally to call in alienists to determine the mental condition of certain offenders.

"With the introduction of this medical and psychological work in the municipal court of Boston, daily, individuals are being sent in for examination in order to determine their responsibility or their need of medical attention.

"Of those whose mental condition was the problem, feeble-mindedness easily outranks all others as a cause; 37%+. Other pathological mental conditions are being met with, such as insanity and epilepsy. Of those whose physical condition is the problem we find serious impairment of nervous system from alcohol and drugs, tuberculosis, heart disease, venereal diseases.

"From the probation officers all types of problems are brought, whether it be examining for the presence of drugs in suspected cases that deny their use; or in studying the underlying causes within the individual probationers themselves for their misconduct; getting at their capabilities and adaptabilities, with a view to better understanding their makeup and their possibilities, to be used in so handling them on probation as to adapt each individual's supervision and treatment to his or her special needs.

"Through the psychology of human differences it is possible to bring to light special mental defects, peculiarities and experiences, both personal and social, that have all to do with the production of antisocial conduct. And here lies a most constructive side of this work, for in studying the underlying makeup of young delinquents and so fitting their treatment to meet their individual needs, the saving to society by averting criminal careers is immense."

The importance of such work in the study of the medical aspects of crime and misconduct is obvious to all, and the attention of laity and profession is called to this report, whose careful reading is of value, not only for information, but for establishment of opinion.

P. S. D. FUND.—The initial response from Boston to the appeal for the P. S. D. fund, published on the last page of this issue of the JOURNAL, amounted to $1718.

MEDICAL NOTES.

NEW YORK DEATH RATE.—Figures compiled by Registrar Guilfoy, of the New York Department of Health, showed that the death rate for the past week was a trifle higher than during the corresponding week of 1915. During the past week 1628 persons died in the City of New York, as compared with 1571 during the corresponding week last year, the respective rates being 15.20 and 15.03 per 1000 population. The difference of .17 in the rate is equivalent to an increase of 18 deaths, the remaining 39 deaths being accounted for by the increased population. In other words, had the rate for the week ending Feb. 20, 1915, prevailed during the past week, there would have been 1610 deaths, as compared with 1628, which actually occurred. The acute infectious diseases showed a slight increase, namely 7 more deaths than occurred during the corresponding week of 1915. On the other hand, there were 16 fewer deaths from acute respiratory diseases, but the deaths from influenza, heart disease and nephritis were more numerous during the past week than during the week ending Feb. 20, 1915. The death rate in the boroughs of Manhattan and Brooklyn was lower than during the corresponding week of 1915, while in the other boroughs it was higher. The death rate for the first eight weeks of 1916 is 16.14, as compared with 14.81 of the corresponding period of last year.

NEW YORK HEALTH DEPARTMENT TO CELEBRATE ITS SEMI-CENTENNIAL.—The New York Department of Health is planning to celebrate the semi-centennial of its establishment by a banquet at the Hotel Plaza on Thursday, March 9. As at present constituted, the Department dates from 1866, when the Metropolitan Board of Health was organized to supervise the health of the cities of New York, Brooklyn, the counties of Westchester, Queens and Richmond, and part of the present county of Nassau. At that time sanitary conditions in this city were a disgrace; the death rate was higher than in any other large city in the world, and was apparently increasing. During the fifty years of its existence the death rate has been reduced from 36 per 1000 to less than 14 per 1000. Among the speakers will be Mayor Mitchel, Mr. Henry Bruère, Surg. General Gorgas, State Health Commissioner Biggs, Prof. Wm. H. Welch, Dr. Peter Bryce representing the Dominion of Canada, and Dr. Stephen Smith. The last named was one of the original Board of Health in 1866, and is still active in public affairs, being a member of the State Board of Charities.

FREE MUNICIPAL CLINICS FOR SCHOOL CHILDREN.—The free municipal clinics for school children which have been operated in New York by the health department, aided by the Bureau of Welfare of School Children of the New York

Association for Improving the Condition of the Poor, are to be closed and the work turned over to public hospitals. As a summary of the three years' work of the clinics the following résumé is offered: cases registered, 18,764; operations performed, 9,770; treatments, 61,422.

UNIVERSITY OF BUFFALO ALUMNI CATALOG.—The Alumni Association of the University of Buffalo has published a catalog, which contains the names of all classes graduated from the Medical Department of the University of Buffalo from the year of its foundation, 1846, until the present time; also the names of graduates of the Medical Department of the Niagara University from its organization in 1886 to 1898 when it became amalgamated with the Medical Department of the University of Buffalo.

Since its foundation, the University graduated 2,737 physicians, while Niagara University graduated 137, making a total of 2,974 graduates, 847 of whom have died and 207 cannot be located, making a total of 1054 dead and unknown. The Association's active membership is 1,820. The geographical index shows the U. of B. medical graduates in all parts of this country, Canada and abroad. Of the 800 physicians in Buffalo nearly 600 are U. of B. men. In Rochester there are 115 Buffalo graduates. In Batavia, Lockport, Niagara Falls, Olean, Jamestown, —in fact, in western New York, the Buffalo graduates predominate. In New York City and vicinity there are upwards of 70 Buffalo graduates. Chicago has about 20, and Detroit about 10.

EUROPEAN WAR NOTES.

FOURTH HARVARD SURGICAL UNIT.—On Sunday, March 5, the fourth Harvard surgical unit sailed from New York City aboard the *California* to relieve members of the third unit who have been on service in France since November 1, 1915. The members of this fourth unit are Dr. William E. Faulkner, Dr. Benjamin P. Burpee, Dr. Thomas F. Capeles, Dr. Samuel R. Meaker and Dr. William R. Morrison.

WORK OF A BRITISH UNIT IN SERBIA.—In a recent issue of the *Lancet* was published the following account, by a member of the unit, of the work of a British hospital unit in Serbia last year. It is interesting in comparison with the now familiar experiences of the American unit in Serbia under command of Dr. Strong.

"The Royal Free Hospital Serbian unit, organized and led by Mr. James Berry, F.R.C.S., and Mrs. F. M. Dickinson Berry, M.D., B.S., left England in January, 1915, to found a surgical hospital of 100 beds in Serbia. The party arrived in Serbia just when the typhus epidemic was at its height. In Nish the death-rate among the war prisoners was 60 per cent. Uznitze had lost all her doctors save an Austrian captive, Valievo was in quarantine, and so, in spite of the fact that the unit was designed for surgery, the majority of the staff applied to be sent to some plague-stricken spot to help against the scourge which was raging amongst the population. But the Serbian Government, alarmed at the loss of life among the British units already stationed at Uskub and Kraguevatch, decreed that the work must remain surgical in character, and sent the mission, along with the British Red Cross unit, to Vrnjachka Banja, a small watering place almost free from typhus, some fifty miles northwest of Nish. Here a hydropathic hotel was commandeered, the large dining-room turned into a main ward, a douche bathroom, became the receiving room, a steam bath the operating theatre, a radiant light bathroom the sterilizing room, while the clerk's office had all the windows plastered up and became the sulphur room in which clothes were disinfected. Soon the operations enlarged and the village school was absorbed. While this was in progress, suddenly the Serbian medical authorities sent a batch of sixty patients, all of whom had already or soon developed typhus in a most virulent form. The position was quite changed. The Red Cross had taken over the local medical barracks, and though we wished to coöperate, the place was too small for both units, and it was decided to build. Owing to Mr. Berry's energy and enthusiasm, a long wooden building was run up in incredibly short time on the Serbian labor standard. In the meantime the typhus patients were nursed in the small bedrooms of the hospital, a difficult task, as they each required constant individual care and a measure of restraint in delirium. To guard against the risk of further infection, measures were arranged in common with the Red Cross unit. One of the hot sulphur springs of the town provided a central bath in which all new arrivals were washed, and head, pubic and axillary hair shaved, passing thence into a quarantine hospital under Mr. E. Ulysses Williams, hastily adapted from the 'State' café Here the patients were kept for ten days until, all danger of developing typhus being over, they were distributed amongst the various hospitals of the town.

"The accumulating number of slightly septic cases with wounds which would not heal, and of crippled Austrian prisoners who could not be repatriated, necessitated further extension which was found in the 'Merkur,' a large villa in the park. The threat of a hostile advance in May and a great influx of wounded led to still further enlargement, and the 'Athene,' another big villa standing in the main street of the town, was got ready with the help of a band of Austrian prisoners. The number of beds was thus brought up from an initial estimate of 100 to a possible 450, in spite of the fact that some of the staff, their three months' contract over, had returned to England. The problems presented were mainly sanitary, for the Serbs' domestic habits

were uncleanly. Surgery was for the time relegated to the second place, and Mr. Berry became a sanitary engineer. With the assistance of Mr. Jan Gordon, engineer to the unit, the existing lavatories of the villas were cemented down, the overflowing cesspools thoroughly drained and then concreted over, and a dry-earth system instituted. The hardest task was to induce the patients to use the system in a clean and healthy manner. The yard of the 'State' café was a filthy swamp; drains were laid in this. With the help of an intelligent Austrian prisoner, destructors and boilers were built; the model was afterwards adopted by the Serbian sanitary authorities."

CHICAGO UNIT AT THE FRONT.—Report from London states that, on February 26, a unit of 33 American nurses from Chicago left for six months' service in field hospitals at the British front.

WAR RELIEF FUNDS.—On March 4 the totals of the principal New England relief funds for the European War reached the following amounts:—

Jewish Fund	$888,132.74
Red Cross Fund	144,971.60
Belgian Fund	102,231.58
Serbian Fund	82,147.68
American Ambulance Fund	75,191.58
Allied Fund	66,388.80
French Wounded Fund	52,450.31
Armenian Fund	34,676.79
French Orphanage Fund	29,947.87
Polish Fund	21,991.47
Surgical Dressings Fund	19,888.55
Italian Fund	15,469.35
French Refugees' Fund	7,340.50

AMERICAN AMBULANCE HOSPITAL.—Efforts are being made to have individual beds at the hospital endowed. It is estimated that for about $600 a bed can be suported for one year, the bed bearing a commemorative plate with the name of the donors, and it is planned to have nurses in charge of these beds communicate directly with the donors regarding the work that is being done. Contributions are coming in from Chicago, St. Louis, the South and the West. The American Ambulance Hospital depends entirely on America for its support.

BOSTON AND NEW ENGLAND.

MEDICAL SOCIAL SERVICE NURSES.—The demand for medical social service and for public health workers with social service experience has become so insistent that the Massachusetts General Hospital School for Nurses is arranging a number of lectures, with a certain amount of practical experience on the wards in social service, for all the pupils of the school. This is in addition to the special course that is given to several student nurses every year in the social service department.

CHANGES IN DEATH RATES IN BOSTON.—The Boston Health Department issues in its Bulletin the following computation to show the varying rates in some of the leading causes of death from 1850 to 1915. Heart disease in the year 1850 ranked as 3.80 as a cause of death and rose steadily until in 1915 it stands 21.50. Pneumonia has varied but little. Cancer with a per cent. of 2.12 in 1850, has become 11.40 in 1915, and kidney disease from .44 has become 10.93. Pulmonary tuberculosis, on the contrary, had a rate of 42.82 in 1850 and has fallen to 13.78 in 1915. The total number of deaths reported from cancer in 1915 was 855, classified as follows:—

Cancer of stomach and liver	257
Cancer of peritoneum, intestines and rectum	149
Cancer of female genital organs	124
Cancer of breast	93
Cancer of buccal cavity	38
Cancer of the skin	14
Cancer of other organs, or not specified	180

There were four deaths reported under five years of age. The range of ages was from under two years to ninety-five years.

FREE WASSERMANN TESTS.—The Bacteriological Laboratory of the Boston Health Department is prepared to examine blood specimens by the Wassermann test for syphilis. Tests are made each Tuesday, Wednesday, Thursday and Friday. Patients for whom the test is requested should be sent to the laboratory, Room 1101, City Hall Annex, where the blood specimens will be taken. History blanks will be mailed to any Boston physician on request, and each patient appearing at the laboratory must present one of these, carefully filled out and signed by his attending physician. The laboratory will be prepared to receive these patients and to collect the blood specimens on Mondays, Tuesdays, Wednesdays and Thursdays, from 2 to 4 P.M., only. Specimens will not be collected at any other time, nor will they be collected from patients coming without a carefully prepared history card. Owing to the large number of requests, outfits for collecting blood specimens will now be furnished to physicians who call or send to the laboratory for them. The specimens must be returned to the laboratory by messenger. Culture stations are forbidden to receive them. Physicians who desire instruction in taking these specimens may bring their patients to the laboratory at the regular hours for this work and the method will be demonstrated. This test, like all laboratory tests furnished by the department, is without cost to physician or patient.

Examination of Prisoners.—On July 8, 1915, the State Board of Insanity of Massachusetts voted to delegate Dr. Charles B. Sullivan, examiner of insane prisoners for the Board, to examine a group of selected patients at the Bridgewater State Hospital and a group of prisoners at the Massachusetts State Prison, to determine whether they were sane or insane malingerers.

On August 12, 1915, it was also voted that Dr. Ernest B. Emerson be added to the examiners of prisoners at the State Prison and of patients at the Bridgewater State Hospital who have been transferred from one institution to the other more than once, and all persons who have ever been returned to the Bridgewater State Hospital from the State Prison who are now confined in either institution.

Reports have been received from Drs. Sullivan and Emerson on their examination of 17 prisoners, a copy of which was furnished the Prison Commission. Dr. Sullivan reports that out of this number he believes six to have been insane and recovered; 5 to have been insane in part, with a question of malingering added thereto; 3 in whom there is a question of their being insane or malingerers; and 2 in whom there is a question of their being insane without any thought of malingery.

Harvard Veterinary Alumni Association.—The nineteenth annual meeting of the Harvard Veterinary Alumni Association was held in Boston on Feb. 23. Dr. Wm. A. Naylor of Boston discussed the effect of the advent of the automobile on the practice of veterinary surgeons during the past ten years. He commented on the establishment by wealthy citizens of institutions wherein sick and injured animals are treated and operated on for fees far lower than qualified and experienced veterinarians can accept. He said that while the automobile has increased the number of accidents to small animals, it also has tended to increase the price of horse flesh; and that owners of valuable stock are more willing to pay a reasonable fee for their treatment than in years past.

The following officers were elected for the ensuing year: President, Dr. John W. Robinson of Natick, Mass.; secretary-treasurer, Dr. James J. Mulvihill of Norwood, Mass.

Races at the Boston Dispensary.—In her recently published report, the registrar of the Boston Dispensary states that among the 35,000 patients treated in that institution during the past year, there were represented 34 pure races and 29 types of mixed parentage. Only 25% of the total had both parents born in the United States; and 22% of the total were Hebrews.

Hospital Bequest.—The will of the late Annie E. Symonds of Beverly, Mass., which was recently probated, contains a residuary bequest of about $50,000 to the Beverly Hospital.

Obituary.

HENRY BAIRD FAVILL, M.D.

Dr. Henry Baird Favill, of Chicago, who died of pneumonia on February 20, at Springfield, Mass., was born at Madison, Wis., August 14, 1860. He was the son of Dr. John Favill, an old-time practitioner of that locality. He was a graduate of the University of Wisconsin and the Rush Medical College of Chicago, and received the honorary degree of LL.D. from the University of Wisconsin in 1913. He first practiced with his father at Madison and later went to Chicago, where for 22 years he had been one of the leading clinical authorities in the city. Dr. Favill had been president of a number of medical organizations in Chicago and chairman of the council of health and public sanitation of the American Medical Association. He was also active in civic and social life. He was interested in the revival of New England agriculture through his activity as a breeder of fine Holstein cattle. He had been president of the National Dairy Council and vice-president of the National Holstein-Friesian Association. He was an extremely proficient presiding officer, a rare quality in physicians.

Miscellany.

DR. STRONG ON THE PLAGUES OF MAN.

In a recent issue of the Journal we noted briefly the first two of the series of lectures at the Lowell Institute by Dr. Richard P. Strong on "The Plagues of Man." In the third of these lectures, devoted to bubonic plague, Dr. Strong outlined the history of this important epidemic scourge which, during the past fifteen years has caused over eight million deaths in India alone. He then described its clinical phenomena and the modes of its transmission, referring particularly to its enzoötic occurrence among ground squirrels in California and efforts which are being made for its eradication among them. He also discussed the methods adopted for the extermination of rats in various infected regions.

"Our method in Manila whenever any outbreak of the plague was reported, was to select a point in the city and then draw radiating lines from that point out toward the suburbs. Down these lines our rat catchers would work, and then fix the point farthest out on each of these lines where any infected rat had been found. Connecting lines drawn between these outside points would determine the area in which our rat-catching squads should concentrate their efforts. It is, of course, a mistake to begin catching rats at the center and work out, as that merely drives the rodents farther and farther out.

"When the infected area has been determined, the proper thing to do is to construct a galvanized iron fence around its boundaries. This fence must be sunk two and a half feet into the ground, and more than three feet high. The rats will not burrow, it has been found, more than two and a half feet deep nor jump over any obstruction more than three feet high.

"It is, of course, very important to protect shipping against the plague, for otherwise the disease might quickly be spread to all corners of the globe. In all dangerous ports, rat shields are now required to be attached to every hawser to prevent the entrance of rats aboard ship. It is further required that the ships themselves should be boomed away from the docks, so that the rodents cannot pass directly on board them. In many ports today the docks are being constructed so that they will be as nearly as possible rat-proof, being built on concrete foundations without any connecting beams along which rats might crawl."

The fourth lecture on the Black Death described Dr. Strong's campaign in China when the scourge broke out in that country in 1910. The pneumonic plague, known as the Black Death, which destroyed about one-fourth of the population of Europe, appeared in that continent in the year 1384, after devastating Asia and Africa. It moved into Europe from a focus in the Crimea and from a second focus by way of Austria. It swept all before it, demoralized the people, who forsook all other considerations and tried madly to save themselves.

"Such was the terrible plague which disappeared in epidemic form after the year 1384, not again breaking out until 1910 when it appeared in Manchuria and North China.

"No doubt exists concerning the source of the epidemic. The marmot in China, known as the ptarmigan, was epizoötically afflicted with the disease, and the trapping of this animal, for the increasing trade in its fur, had lately become extended. The trappers closely crowded round the market centers of the north as winter came on, were living under conditions particularly favorable to the spread of an epidemic. When the disease did pass to man, 400 trappers in the town of Manchuria immediately succumbed. Two men from this city, traveling by railroad to Harbing, carried the plague to other regions, and it spread rapidly to all regions and south to Mukden. Great numbers of farm laborers, anxious to leave the north with the arrival of cold weather, were moving out of the infected district, and these 60,000 coolies carried the plague far and wide.

"In the infected region itself there were no suitable hospitals. At Mukden, for instance, an old temple was converted for use as a hospital. Long board platforms were set up in it in lieu of beds. The Chinese doctors stood outside of the windows and conversed with their patients at somewhat long range, often getting the patients to count their own pulse-beats while the doctors timed them. On account of the fear of the plague, the sick were given no medical care whatever, and the dead were removed and handled by long hooks in the way that stevedores handle cargo. Great cold prevailed, even chloroform sometimes froze as it was being administered. It may be said that the fear of the Chinese was justified because during the course of the epidemic twenty-three of the hospital staff developed the disease and died, and 127 of the attendants outside of the hospital died."

In his fifth lecture, on Asiatic cholera, Dr. Strong stated that the disease first appeared in the United States in 1832 and reappeared several times in the latter half of the nineteenth century.

"In the past twenty years in India alone, Asiatic cholera has killed more than seven million people. Its history before 1817 is more or less indefinite, although the disease certainly was not known in Europe or America prior to that year. In 1817 an epidemic of cholera in India spread into China and Japan, and became in effect a world-wide pandemic. A second outbreak was carried to Germany in 1831, and in 1833 ravaged Europe and the United States. The epidemic in America, first entering this country through New Orleans, produced valuable memoirs on the disease by James Jackson and Jacob Bigelow The high quality of the work against the disease done by Dr. Bigelow, who was one of Technology's founders, is instanced by the fact that here in Boston, where his preventive work was done, the mortality was limited to one hundred cases, whereas in New York City it reached 3000 deaths.

"Repeatedly the plague entered America during the latter half of the nineteenth century, usually coming by way of the port of New Orleans. The last great epidemic broke out in 1900, and may be said to be still under way. It has never been known to any extent on the western coast of South America, but with the opening of the Panama Canal, and the establishment of more direct lines of commerce between India and Balboa, it will not be surprising if cholera appears on the western coast.

"The chief centre of cholera is the city of Benares in India, where the heat and great moisture favor the course of the disease. Here along the banks of the Ganges, the river in which millions of Hindus bathe themselves, wash their clothes and their elephants, find their drinking water and much religious consolation, cholera rages mightily Thousands of India's Hindus, which constitute two-thirds of her population of 315,000,000 people also come to the city on pilgrimages and make haste to bathe in the Ganges and drink of its waters. Adding to the opportunities for infection, there are along the banks of the river many sacred wells, of which the waters are supposed to cure various diseases, but by which cholera and other infections are easily spread. The drainage of the

city largely passes into the Ganges, and many dead bodies are given burial in it in accordance with a religious practice.

"The Indian government has been very unsuccessful in coping with the disease and with the conditions that cause it. As a result epidemics of the plague continue, and the rest of the world suffers."

Regarding yellow fever, Dr. Strong stated that,

"In comparison with the other infectious diseases, however, yellow fever has a very limited geographical distribution. One of its worst important centres is the West Indies, whence it has repeatedly spread northward to the United States and Mexico, southward to Brazil, at times as far as Buenos Aires and Montevideo, west to Central America, and across the Isthmus of Panama to the Pacific coast, along which it has extended north to the Gulf of California and south to Peru, even to Chile. It occurs also endemically on the west coast of Africa.

"The United States has suffered more from this disease than any other large country. Nearly every one of our great seaports has been invaded by yellow fever, and the losses from it have been enormous. Many of our interior towns along the water courses or railroads have also suffered severely. In the epidemic of 1878, over 13,000 people lost their lives in the Mississippi valley. According to the available records, over 100,000 deaths from yellow fever have occurred in this country since 1793.

"A great many attempts have been made to discover, isolate, and cultivate the germ or virus causing yellow fever. Various bacilli isolated from yellow fever cases, and believed to be the cause of the disease, have later been proved to be organisms of a different nature. Thus far the true organism of the disease has not been successfully cultivated.

"Reed and Carroll in their investigations showed that the filtered blood of yellow fever cases was infective and evidently contained the parasite of the disease. They also showed that after such blood had been passed through a porcelain filter it still remained infective. A French commission proved that the disease could be communicated by the inoculation of infected blood, filtered through the closest grained Pasteur Chamberland filter which is made. Therefore the organism of yellow fever is not visible even with the highest powers of the microscope. It must have a diameter of less than four-tenths of a micron, and hence it is evident that we shall not be able to see it, certainly not in the form in which it occurs in the blood, until we have magnifying lenses of greater power than the ones we possess at the present time."

Yet, inasmuch as the method of transmission of yellow fever is well known and the extermination of the disease-carrying mosquitoes possible, the eradication of this disease is practicable by concerted action of the nations involved.

In his last lecture Dr. Strong urged better preparation on the part of medical army officers to care for the health of large bodies of troops. The ravages of dysentery and typhus fever during the Civil and Spanish Wars should never be allowed to be repeated. Regarding the control of typhoid fever in the army, Dr. Strong stated as follows:

"There has been recently a great tendency to assume that now that we have anti-typhoid inoculation, this method alone will protect our inoculated troops from serious outbreaks of the disease. The low rate of typhoid in our armies during the past few years is not by any means due alone to anti-typhoid inoculation but also particularly to the other sanitary measures taken for the prevention of this disease. If we should attempt to rely upon protective inoculation alone, and place our troops in an infected community, we should find the fallacy of the idea that inoculation is absolutely protective.

"It is perhaps unnecessary to report the fact that in Mrs. Stovart's British field hospital in Serbia, during the past year, where all of her staff had been carefully inoculated against typhoid fever, 21 out of 42 of her staff, or 50%, contracted the disease, and 10% died of it. In the French army in northern France I found on my visits to the front in March that already about 100,000 cases had occurred among the troops. The public has obtained a false idea of absolute security in anti-typhoid inoculation, and many of our physicians are also imbued with the same erroneous idea."

CONTINUED INCREASE IN COST OF DRUGS.

FOLLOWING the slight temporary cessation of the rise in the cost of drugs at the beginning of the new year, a still more rapid rate of advance has set in during the past month. Report from New York on January 31, speaks of this advance in part as follows:

"The most conspicuous development has been the exorbitant inflation of values for all Far East drug products following advances in ocean freights to rates never heard of before. The use of the Cape of Good Hope route to and from the Far East by practically all British, Japanese, Scandinavian, French and American ships, instead of the usual Suez Canal route, has not only proved detrimental to Mediterranean ports, such as Marseilles, Genoa, Leghorn, Naples, etc., but has delayed goods in transit to the United States fully one month, and has, moreover, appreciated the spot value of Chinese, Japanese, Javanese, Indian, Ceylon and Straits Settlements products generally. All round advances have been named in freight rates, and

practically no more space for merchandise tonnage is obtainable from Colombo, Ceylon or Calcutta, India, until the middle of February. War risk and insurance rates have also jumped sharply and have added 5 to 10% on the original cost of the goods offered for import.

"Castor oil prices have risen from a basis of 15 to 27 cents per pound, and little, if any, is now obtainable at less than 30 cents per pound and upwards, owing to a dearth of castor seed and castor beans, which are obtained from India. None the less important have been the sharp advances in China products. Cablegrams from Hankow, China, state that the Chinese Government has requisitioned private junks, steamers, and other conveyances afloat along the Yangtze river which were used for carrying China wood oil from the upper part of the river to the Hankow markets. It is feared that shipments of the oil will thus be badly delayed. The market for Manchurian bean oil has also been thrown on end by the heavy purchases by the United Kingdom. Sales of close to 140,000 barrels for March-April shipments have been closed to the United Kingdom, and it is understood that British importers have paid one-half cent per pound higher than New York importers have been willing to pay. Recent imports into the United States include more than 96,000 packages and an additional 180,000 packages are now en route.

"Recent advices received from Amsterdam, Holland, tell of an advance of more than 50% in prices of pharmaceutical cinchona bark, where 1919 packages, or 121,398 kilos, were offered at auction on Jan. 20 last.

"Predictions of a further advance of 25 cents per ounce in quotations for quinine sulphate are being made by the interests in closest touch with the situation, the new schedule being warranted by the heavy appreciation in value of the crude material. Italy and France are inquiring for the drug in this market from time to time, and the shortage keeps prices in outside hands strong at $1.05 and $1.15 an ounce.

"Nux vomica, of which the active principle is strychnine, is another Indian product which has greatly appreciated in value here within the past few days. The schedule of prices as now quoted by the manufacturers, is 80 cents for the sulphate powdered and crystals in bulk, and 83 and 86 cents for the alkaloid powdered and crystals, in bulk. Makers are not, however, entering contracts at these figures, but are only soliciting the preference of orders for prompt deliveries.

"Sandalwood oil has advanced to a cost of $7.00 per pound."

The Boston Association of Retail Druggists has recently issued a statement showing the percentage increase in cost of certain drugs during the past 20 months. Some of the most notable of these are as follows: Acetphentidin, 1600%, antipyrine, 2000%; atropine, 1900%; benzoic acid, 1000%; carbolic acid, 1200%; creosote, 1200%; quinine, 700%; lanoline, 700%; mercury, 800%; mustard, 900%; synthetic oil, 1200%; phenacetine, 2500%; phenolphthalein, 1300%; potassium permanganate, 800%; saccharin, 1000%; salicylic acid, 1000%; salol, 1000%; tartar salts, 1000%; sodium salicylate, 1000%; and thymol, 600%.

On the last page of this issue of the JOURNAL we publish a tabulated statement of the present cost of the common drugs whose prices have been affected by war conditions.

THE LEPER COLONY ON PENIKESE ISLAND.

IN the issue of the JOURNAL for January 27, we published a note referring to remarks made by Dr. R. P. Strong, in a lecture given at the Lowell Institute on conditions in the leper hospital at Penikese Island. His criticism of these conditions was in no sense aimed at the officials in charge of this institution, but was intended rather to rouse popular interest in making more adequate provision for the care of this important and increasing class of chronic patients. In the daily press there appeared on January 24 a letter from Mr. Robert W. Kelso, secretary of the Massachusetts State Board of Charity, in reply to Dr. Strong's statements; and in justice to all concerned, it seems only fair that this letter should be reproduced in part in the columns of the JOURNAL.

"The first case of leprosy coming to public attention in this state was isolated Dec. 11, 1882. Since that date twenty-nine cases diagnosed as leprosy have been apprehended, bringing the total of all lepers known to the authorities thus far in Massachusetts to thirty. Four of these were deported under immigration laws; two were discharged for treatment elsewhere; two escaped from the custody of local authorities and were not again apprehended; ten have died; and twelve are now in residence at Penikese Hospital. The total of those who have ever gone to Penikese is twenty-four. The largest number ever there at one time is sixteen.

"Penikese Hospital, aside from an administration building and appurtenances, consists of four cottages, each comfortably housing two patients, and a hospital building with quarters for ten patients, as at present arranged. Each cottage provides a living room, two bed rooms, a kitchen and bath. The hospital building provides ten private rooms, a general living room, a general dining-room and quarters for nurses and attendants.

"The twelve patients now in residence are attended by two physicians, one nurse (two until recently), and one orderly. They have six private baths for their use. They have all th-

privileges consistent with the limitations of an island institution. Thus, each patient has his garden in summer, for flowers and vegetables. He is free to roam over the greater part of the island. He may row or fish from small boats about the shore. Each patient is given such books as he wishes to read. Parrots are kept as pets in the separate cottages. In the living room of the hospital building, the patients have a talking machine, an organ and a pool table. Some entertainment is provided each week, together with religious services. In general, it is a fair statement to say that every reasonable wish of the patient is fulfilled. The problem of making life exiles truly happy is hard at best; it becomes all the more difficult when it is remembered that these twelve patients represent eight different races and that many of them understand English imperfectly. Three of the twelve are Chinese, two are Hebrews born in Russia, two (colored) are natives of the Cape de Verde Islands, one Japanese, one Italian, one Greek, one Lett, and one American. But, in spite of the difficulties arising out of the solitude and the divers races, the patients at Penikese are cheerful and reasonably content.

"Fear of leprosy has caused the public to enforce this exile. The cost in money spent to maintain an isolation hospital at this remote place is excessive. Thus, for the past two years maintenance appropriation for Penikese has been $28,000 per year. The totals spent thus far indicate a lively public conscience in the care of these unfortunates. State expenditures to the close of the last fiscal year (to say nothing of outlays by cities and towns) have totaled $265,262.80. In this sum is all the purchase and construction cost of Penikese, a large part of which is in the nature of an overhead charge. But if liberal allowance be made on this account, there is still an exceedingly heavy outgo for the care and treatment of the few persons who have been thus far isolated because of this disease.

"It is true that the State Board of Charity has sought for several years a sufficient appropriation to permit the construction of better hospital and dispensary facilities, but present quarters are fairly good, and when we reflect that the people of Massachusetts must give kindly and intelligent care to 20,000 insane persons, and to 14,000 others in her charitable institutions, each group pressing for larger facilities and ever more specialized treatment, it should not be said of the public or of their intelligent law-makers that they are neglectful of their duty toward these twelve patients. The facts and figures used in this statement are on record in the files of the State Board of Charity."

As a matter of fact, the views of Dr. Strong and Mr. Kelso are not seriously at variance. Without criticism of anyone, the real point at issue, in which all would be agreed, is that adequate provision and care for the segregation of lepers should be made, either by the national government or by the state within whose confines they reside.

Masachusetts has always been foremost in providing for the care of its lepers, but the cost of this provision is excessive in proportion to the number of patients cared for. The annual expense for the Massachusetts Leper Colony on Penikese Island is about $28,000, and the state has expended a total of about $265,000 on this institution since its establishment. The care of lepers throughout the United States could be undertaken more thoroughly, uniformly and economically by the federal government. There are at present about 2400 lepers in this country, and a bill is now pending before the federal congress for the establishment of a leprosarium for their care. On February 15 a hearing was held on this bill in Washington before the Senate Committee on Public Health and Quarantine. A number of dermatologic experts appeared before this hearing and testified in favor of the bill, among them being Dr. H. M. Parker from Massachusetts. As a matter of fact, the ultimate decision on this question should settle permanently the point at issue with reference to the Penikese Island Colony.

Correspondence.

A PROTEST ON MEDICAL LEGISLATION.

NANTUCKET, MASS., Feb. 25, 1916.

Mr. Editor: On February 24th inst. a hearing was held before a legislative health committee, on a bill, to allow registration to "herb doctors." One "doctor" in particular came in for prominent mention. There was no opposition to the bill from the medical profession.

It is high time the medical profession, in this state, began to learn the lessons of preparedness in order that we may protect the tenets of our profession from the onslaughts of those who are attempting to tear down the structure which it has taken centuries and many lives to mould. There should be committees appointed to meet these exigencies. Many times bills come before our legislative bodies of which the profession as a whole are totally ignorant There ought to be some means of placing the profession on a "fighting basis" that they might be prepared. The enemies of the profession are always ready to enter a breach in our lines, it is up to the profession to meet these attacks. Registration for the "herb doctor" would open a fertile field for the charlatan.

The testimonials at the hearing, as reported in the newspapers, savored very much of the "Patent Medicine" variety, strongly tinctured with oriental mysticism. Although the bill would only allow the "herb doctor" to prescribe and administer herbs, it would have the dangerous aspect of giving more power to those that are unqualified, in the treatment and care of the sick.

Respectfully yours,

FRANK E. LEWIS, M.D.

PRESENT COST OF COMMON DRUGS.

Aspirin	Per oz.	$ 1.00
Atropine	Per gr.	.20
Bromide sodium	Per lb.	5.00
Bromide potassium	Per lb.	6.00
Cocaine	Per oz.	5.00
Chloral	Per lb.	2.00
Eserine	No advance in price	
Digitalis	No advance in price	
Hyoscine	Per gr.	$ .40
Scopolamine	Per gr.	.40
Iodine:		
Potassium iodide	Per lb.	5.00
Mercury:		
Ointment	Per lb.	2.75
Bichloride	Per lb.	4.00
Calomel	Per lb.	4.00
Opium:		
Morphine	No advance in price	
Codeia	Per. oz.	$ 9.00
Heroin	Per oz.	11.00
Salicylate sodium	Per lb.	6.00
Sulphonal	Per oz.	1.25
Trional	Per oz.	1.75
Veronal	Per oz.	1.50
Iron preparations	No advance in price	

NOTICE.

PHYSICIANS', SURGEONS' AND DENTISTS' FUND.

February 25, 1916.

To the Physicians, Surgeons and Dentists of the United States:

Gentlemen:

We, the Undersigned, having devoted our energies for various lengths of time in helping our colleagues, the surgeons, physicians and dentists of France;

Realizing, that they are working under terrific stress and strain, under improvised conditions and often with an insufficiency of instruments and material, as attested by the enclosed bulletin of the War Relief Clearing House:

And feeling, that many of our colleagues here would gladly contribute a sum of money monthly for the purchase of instruments and materials here or abroad as wisdom and need indicate;

Propose, that such a brotherly manifestation of solicitude be made, and we call upon our professional brethren throughout this land in sympathy with the cause of Liberty and Justice, so dear to these two Democracies, to pledge themselves to contribute to this fund $2.00 per month for the year 1916, from January 1st, to be paid monthly or in block. This sum to be placed at the disposition of the American Relief Clearing House in Paris, the official bureau of all American Charities, and in constant touch with all necessities over there. These sums to be expended in such a way as they may see fit, advised by a representative of the French Academy of Medicine, and a representative of the Minister of War, in order that the wisest posible use may be made of the funds thus furnished.

Further, we solicit donations of instruments in first-rate condition, and hospital equipment of all kinds; bearing in mind that in the present crisis everything is needed.

May we even ask our colleagues to economize in all wisdom, and not to waste in this land of plenty, but to contribute to the cause that which is saved. Also, that they may endeavor to interest their various clients to aid us in our work.

We pledge ourselves to our utmost to see that every contribution arrives where there is need for it and feel that this friendly gesture of one country to another through our professional channel, will be received with a gratitude most touching and bear fruit in the relations between our two countries in the future.

What the architects, artists and sculptors of our country have done for their confrères, who are in the ranks across the ocean, we may well do also.

(Signed) GEO. E. BREWER, M.D.
G. W. CRILE, M.D.
HARVEY CUSHING, M.D.
JOSEPH FLINT, M.D.
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All moneys subscribed go to the fund without deduction for administration expenses.

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All contributions in material should be sent prepaid to P. S. D. Fund, War Relief Clearing House, 133 Charlton Street, New York City.

SOCIETY NOTICES.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY.—The next meeting of the New England Ophthalmological Society will be held at the Massachusetts Charitable Eye and Ear Infirmary, 233 Charles Street, Boston, on Tuesday, March 14, 1916, at eight o'clock.

PROGRAM.

Hospital cases.

Papers:

Continuation of Symposium on Refraction. Discussion to be opened by Dr. Greenwood.

Members are earnestly requested to be prepared to take part in the discussion and thus aid in making the meeting interesting and profitable.

It is suggested that members bring notes on any cases which may have been particularly interesting or difficult.

W. HOLBROOK LOWELL, M.D., *Secretary*

PETER BENT BRIGHAM HOSPITAL.—There will be a medical meeting in the amphitheatre of the hospital on Tuesday evening, March 14th, at 8.15 o'clock.

PROGRAM.

1. Exhibition of cases.
2. "Studies in Experimental Pneumonia." Dr. L. H. Newburgh, Dr. J. H. Means, and Professor W. T. Porter.
3. "Studies of the Renal and Coronary Circulations." Dr. A. A. Ghoreyeb.

Medical students and physicians are cordially invited. Telephone, Brookline 5260. Any visitors may be on telephone call if their names are left at the front office of the hospital.